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ROYAL COMMISSION OF INQUIRY INTO CERTAIN  
DEATHS AT THE HOSPITAL FOR SICK CHILDREN AND  
RELATED MATTERS.

Hearing held  
8th floor  
180 Dundas Street West  
Toronto, Ontario

Kauffman  
(cont'd)

The Honourable Mr. Justice S.G.M. Grange

P.S.A. Lamek, Q.C.

E.A. Cronk

Thomas Millar

Commissioner

Counsel

Associate Counsel

Administrator

X Ontario

Symes  
Sturichoff

Transcript of evidence  
for

December 2, 1983

VOLUME 74

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ROYAL COMMISSION OF INQUIRY INTO CERTAIN  
DEATHS AT THE HOSPITAL FOR SICK CHILDREN  
AND RELATED MATTERS.

Hearing held on the 8th Floor,  
180 Dundas Street West, Toronto,  
Ontario, on Friday, the 2nd  
day of December, 1983.

- - - - -

THE HONOURABLE MR. JUSTICE S.G.M. GRANGE - Commissioner  
THOMAS MILLAR - Administrator  
MURRAY R. ELLIOT - Registrar

- - - - -

APPEARANCES:

P.S.A. LAMEK, Q.C. )	Commission Counsel
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D. HUNT )	Counsel for the Attorney
L. CECCHETTO )	General and Solicitor General
	of Ontario (Crown Attorneys
	and Coroner's Office)
I.J. ROLAND )	Counsel for The Hospital for
M. THOMSON )	Sick Children
R. BATTY )	
D. YOUNG	Counsel for The Metropolitan
	Toronto Police
W.N. ORTVED )	Counsel for numerous Doctors
K. CHOWN )	at The Hospital for Sick
	Children
B. SYMES	Counsel for the Registered
	Nurses' Association of Ontario
	and 35 Registered Nurses at
	The Hospital for Sick Children

(Cont'd)









APPEARANCES: (Continued)

D. BROWN	Counsel for Susan Nelles - Nurse
E. FORSTER	Counsel for Phyllis Trayner - Nurse
J.A. OLAH	Counsel for Janet Brownless - R.N.A.
B. JACKMAN	Counsel for Mrs. M. Christie - R.N.A.
S. LABOW	Counsel for Mr. & Mrs. Gosselin, Mr. & Mrs. Gionas, Mr. & Mrs. Inwood, Mr. & Mrs. Turner, Mr. & Mrs. Lutes, and Mr. & Mrs. Murphy (parents of deceased children)
F.J. SHANAHAN	Counsel for Mr. & Mrs. Dominic Lombardo (parents of deceased child Stephanie Lombardo); and Heather Dawson (mother of deceased child Amber Dawson)
W.W. TOBIAS	Counsel for Mr. & Mrs. Hines (parents of deceased child Jordan Hines)
J. SHINEHOFT	Counsel for Lorie Pacsai and Kevin Garnet (parents of deceased child Kevin Pacsai).



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---Upon commencing at 10:00 a.m.

DR. RALPH KAUFFMAN, Resumed

MS. THOMPSON: Good morning, Mr.  
Commissioner.

THE COMMISSIONER: Yes, Miss  
Thompson.

MS. THOMPSON: Just to follow up  
on something that was raised yesterday. Mr. Hunt  
asked for a reference to Dr. Bain's testimony  
respecting the 16 children he cited to have  
convulsions or seizures. That information is found  
in the examination by Mr. Labow, Volume 62, page  
3894. Dr. Bain names the 17 children there  
including a Baby Hotchinkson and that baby is not  
one of our 36, the others are.

THE COMMISSIONER: Yes. So, there  
are actually 15 then, is that it?

MS. THOMPSON: No, there were 17  
babies.

THE COMMISSIONER: 17, I see.

MS. THOMPSON: And Hotchinson was  
not one of our babies. So, that would leave 16  
of our 36 babies.

MR. ORTVED: What was the volume  
number again?

MS. THOMPSON: Volume 62 at page







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3894.

MR. HUNT: I also found another reference to Dr. Bain's evidence re seizures.

THE COMMISSIONER: Yes, all right.

MR. HUNT: It is Volume 63, pages 4099 to 4103. It is in Mr. Lamek's re-direct examination.

THE COMMISSIONER: Yes, all right, thank you.

MS. THOMPSON: Thank you, Mr. Hunt, I am grateful to you.

MR. HUNT: You are welcome.

THE COMMISSIONER: Mr. Ortved.

MR. ORTVED: Thank you, Mr. Commissioner.

CROSS-EXAMINATION BY MR. ORTVED:

Q. Dr. Kauffman, my name is Ortved and I appear here for a number of the doctors at the Hospital for Sick Children and including among them are the clinicians in the Cardiology Ward.

As I understand your evidence, you performed an analysis of the deaths, principally from a pharmacologic point of view?

A. Yes, that was the request to





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me and I then secondarily considered all the other  
information available to me.

3

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Q. Right. You took into account  
all of the available data which you have outlined for  
us and that included the clinical data, correct?

5

6

A. That is correct.

7

8

Q. And as I understand it, you  
are a paediatrician?

9

A. That is correct.

10

11

Q. Not just a paediatrician but  
as I understand it have responsibilities as a  
clinical co-ordinator and as an attending physician  
on a ward at the Children's Hospital in Detroit, is  
that correct?

12

13

14

A. That is correct.

15

16

Q. And included among those  
patients for whom you have responsibility from time  
to time would be cardiac patients?

17

18

A. That is correct.

19

20

Q. So, I take it then that  
assessing the clinical picture is something that  
you felt competent to do?

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A. I felt competent to the  
extent that any experienced paediatrician would be  
competent. I would not compare my competence to a

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seasoned cardiologist.

Q. I understand. But it is clear obviously on a review of your reports and your evidence here that the critical feature in your review of the data was the measurement of the digoxin data and particularly the post mortem values, is that correct?

A. No, not only the post mortem values.

Q. No?

A. I had to take into consideration all digoxin measurements that I had available to me.

Q. Right, and I am not suggesting that you didn't, I am just saying that the digoxin data in total, including the post mortem values, were of critical importance to your analysis?

A. That is correct.

Q. And that obviously is the case, having regard to what you have told us, is the difficulty in distinguishing between death due to digoxin poisoning and death by natural causes in a child suffering severe cardiac disease, correct?

A. It is a difficult distinction to make.

Q. And that is why the digoxin





1  
2 data was of such importance in your analysis?

3 A. It was of importance because  
4 it was one possibility and it was I think the  
5 primary reason I was asked to even look at the babies.

6 Q. Sure. And whereas the  
7 terminal symptoms may have been equivocal, if I  
8 can put it that way, the digoxin data might, as you  
9 put it, provide you with the objective evidence to  
10 come down on one side or the other?

11 A. I don't know if I could go  
12 that far because I think that the digoxin evidence was  
13 important to me and, as we all know, it was of  
14 varying quantities and quality in the different  
15 cases. So, sometimes it was quite helpful and other  
16 times it was not very helpful.

17 Q. Right. And in those cases,  
18 and I don't think we are far apart here, in those  
19 cases where it was helpful, Dr. Kauffman, it assisted  
20 you in deciding whether a particular death which,  
21 by its symptoms, may have been equivocal, was in fact  
22 reasonably probably due to digoxin poisoning?

23 A. I think that is correct, yes.

24 Q. Now, what I would like to do  
25 is just deal with the deaths that you analysed  
sequentially - not all of them you will be happy to







1  
2 hear, Mr. Commissioner - and concentrating specifically  
3 on those deaths which you felt able to express an  
4 opinion were reasonably probably likely due to  
5 digoxin poisoning. The first of those deaths, as I  
6 understand it in terms of time, is the death of  
7 Stephanie Lombardo, correct?

8 A. I haven't listed them in  
9 chronological order, so, I can't answer you with any  
10 certainty. I will take your word for it if you tell  
11 me that.

12 Q. All right. Well, I am dealing  
13 with those deaths which, on your ratings, you rated  
14 3 or above, all right?

15 A. That is correct.

16 Q. Those are deaths you have told  
17 us you felt confident saying were reasonably probably  
18 likely due to digoxin poisoning?

19 A. Yes.

20 Q. Just take it from me for the  
21 moment, Dr. Kauffman, someone here of the greater  
22 A will correct me if I am wrong that the earliest of  
23 those deaths in terms of time is Stephanie Lombardo,  
24 all right?

25 A. I think she died on 23  
December, '80.





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Q. That is correct.

A. Yes.

Q. And it is clear, I put it to you, having regard to your report filed here as Exhibit 266, that the critical feature in your opinion regarding your conclusion insofar as Stephanie Lombardo was concerned was the positive finding for digoxin in a child for whom no digoxin was prescribed.

A. I think that was a very important piece of information to me at the time.

Q. Right. And an additional feature or an additional factor is your opinion that her clinical course was, as you told Mr. Strathy yesterday, not incompatible with digoxin intoxication?

A. That is correct.

Q. And to expand upon that, I don't think I would be taking any liberties to suggest that you were impressed with what you perceived as her sudden deterioration?

A. Yes.

Q. Particularly having regard to the fact that, as you saw it, she had been stable for a period of days?

A. Yes.

Q. Now, you, I take it, are you







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aware, because you told Miss Cronk, that the clinicians,  
Dr. Rowe in particular telling us ascribed a different  
cause of death to Stephanie Lombardo, namely, occlusion  
of her shunt, correct?

A. I don't remember at the moment  
that he said that.

Q. All right.

A. I am not disagreeing with  
you I just don't remember it right now.

Q. All right.

A. I recall that it was  
suggested to me that he at the time thought that that  
was a likely possibility.

Q. Right. And you I think  
indicated in your evidence that you acknowledge  
that that would be a reasonable conclusion?

A. That is correct.

Q. And in fact I think you went  
on to say in your evidence, the next day on November  
29th, and I am referring to Volume 71 at page 5579.

THE COMMISSIONER: Do you have a set  
of transcripts?

THE WITNESS: No. I wish if I could  
see a copy of my testimony as we refer to it.

MS. CRONK: Here is one, Doctor.





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MR. ORTVED: Thank you very much, Miss

3

Cronk.

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THE COMMISSIONER: We haven't another

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set, I take it, available?

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MS. CRONK: No, we don't, sir.

7

THE COMMISSIONER: Well, that is going

to be awkward for you.

8

MS. CRONK: I will see what I can do,

9

sir.

10

MR. HUNT: We have an extra one here.

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THE COMMISSIONER: Have you an extra

12

one. I wonder, if you have an extra one if you could

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put all three - well, how many have we got now, we've

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got three?

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Volume 71?

Q. Do you have that record, Doctor,

A. Volume 71?

Q. Volume 71, page 5579.

A. Right, I have it.

Q. And the question, Dr. Kauffman,

is:

"Q. Doctor, let me be clear about this. If the shunt had in fact occluded, and I recognize that we don't have any autopsy or pathological findings to assist us in a confirming sense in that regard, but I ask you to assume that it had, all right. If that had occurred, Doctor, of the terminal events that this child suffered, the mode of her dying and the cause of those events, including the nature of her cardiac arrest, consistent in your view, could they be caused merely by the occlusion of the shunt?

"A. Yes, I think so, I think they could be. I think that in the absence of digoxin levels being detected in





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"the tissue that would be the most plausible scenario to explain her death even in the absence of an autopsy."

And then you go on to talk about the digoxin in the exhumed tissue, and I don't intend to refer to that now unless someone asks me to. I think the wording you applied to it is most plausible, sir, correct?

A. That is correct.

Q. And that is something that you hold to today?

A. Yes. In the absence of digoxin data I think that was a reasonable assumption at that time.

Q. And just on the subject of your opinion as to the child being stable in the period prior to her death, do you have a copy of the Lombardo chart; I think Mr. Elliot can provide it to you.

A. I can get one.

Q. This is Exhibit No. 78.

A. Okay.

Q. First, before we look at the chart in detail, I would just ask you to agree with me that, Doctor, whenever you have a child who is







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suffering from severe cyanotic heart disease, who has undergone an operation within the first three or four days of her life, in any event you have a child who is at some degree of risk, correct?

A. That's correct.

Q. And certainly if I could ask you to turn to page 37 of that Hospital record. You will see, Doctor, there a reference at the bottom of the page under date 18/12/80, and it is somewhat illegible, it has been --

A. Right at the bottom?

Q. Yes.

A. Yes.

Q. And I understand that reference, and the evidence will bear me out I believe, that that was made by a Dr. Burns who is a qualified cardiologist who was training in Intensive Care. It reads, the typed line of that reference reads:

"Only systolic murmur .. "

I am suggesting to you that that is not the best type of murmur to hear following this type of procedure to install this type of shunt?

A. It indicates that the shunt may not be as large as you would have liked, and that there is not two-way flow.





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Q. Precisely. Underneath that reference you will see, on the next line:

"Seen by Dr. Izukawa ... "  
whom we have heard here was the attending cardiologist:

" ... who agrees with murmur."

Do you see that on the next line underneath "only systolic murmur"?

A. I can read part of that; right, "who agrees with murmur".

Q. Right.

A. Right.

Q. Now, I am suggesting to you that the evidence concerning that reference was that the patient was seen by the doctor, that there was concern about the shunt, and there was raised the possibility of reoperating and maybe revising the shunt by virtue of that murmur that they found troublesome. I take it that that entry there would accord with that view as you understand it?

A. I think it would be consistent with it, yes.

Q. And I take it that you will agree with me that in circumstances where you don't have a good shunt in a baby such as Stephanie Lombardo, you have a baby in whom you can get a sudden change?





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A. That is correct.

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Q. And thirdly, if you will turn

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the page; do you have in your Hospital record page 38A,  
it was left out of the original record?

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A. I have Exhibit 78A.

6

Q. That's it.

7

A. This is it?

8

Q. Yes.

9

A. Okay.

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Q. And if I could direct you,

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Doctor, to the second entry on that page under 21/12/80,  
day 5, that I understand is in reference to the fifth  
day this child was in the Intensive Care Unit. Do you  
see the reference there: "PTT's" all over the place?

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A. Yes.

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Q. And then there is reference

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there following to certain of the values of the PTT's.

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A. "Down to 24 again, her PTT

18

later was 71",

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is that what you are referring to?

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Q. That is correct.

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A. Okay.

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Q. I understand they were having

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difficulties with the heparinization of this child,

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and those partial thromboplastin times

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confirm that as far as you are concerned?

A. Those are partial thromboplastin times I guess. He doesn't have the normals, they are always reporting them over the normal that was run at that point in time, are those on another sheet some place, you can't interpret the isolated time without knowing what the control was.

Q. Well, I don't have that, Doctor. The reference was to those entries and the fact that there was trouble with the heparinization of this child, is that at least consistent with that?

A. They were having difficulty apparently maintaining equal heparinization, or coagulation with heparin I should say.

Q. And then the reference above that is: "stable, looks blue most of the time", do you see that?

A. Yes.

Q. This is - bearing in mind that we know she died December the 23, 1982, this is two days prior to her death, correct?

A. Yes.

Q. And the fact that she does look blue most of the time may be consistent with the shunt being of marginal operation?





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A. I think it would reflect that there was still an adequate pulmonary flow. You get the impression that it may have been - the flow may have been changing from time to time maybe depending on the cardiac output at the point in time. Her transfer note for example says that the baby looks quite pink, cyanotic when upset.

Q. Right.

A. And so she had some change in colour apparently from time to time depending on whether she was crying and so forth.

Q. That I think is really my point. We have a child whose condition is not exactly identical at all times.

A. At least her colour, her oxygenization wasn't identical at all times.

Q. And I am suggesting that having regard to the fact of her very young age; the fact that the murmur was perhaps indicative of the shunt being less than adequate; the problems with her heparinization; the fact that she did appear sometimes pink, sometimes blue. That there is a basis there for a more guarded view of her post-operative course than your characterization, which is stable?

A. I think stable is a relative





B.8

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2 term. I am not, I don't think I have any quarrel  
3 with what you are suggesting. The fact that a baby  
4 with a new shunt may still be partly cyanotic is not  
5 particularly unusual, I mean that is not an infrequent  
6 occurrence. The fact that her cyanosis might be more  
7 or less at different times of the day may not  
8 particularly indicate that she is unstable. The  
9 fact that you are having difficulty getting the right  
10 rate of heparin infusion and PTT's are changing simply  
11 means you haven't found the right rate for that baby  
12 yet. It may mean that when she is not adequately  
13 anticoagulated that there is increased risk and in  
14 that period of time that the shunt could develop a  
15 thrombus, but I don't think it is change in colour.  
16 She obviously is not well and stable is not equal  
17 to well and she would be susceptible to all the risks  
18 inherent in a baby who had just had a shunt placed  
19 and the shunt being inadequate in size. But stable  
20 also can mean that her vital signs were stable.

21 She was active, seemed to be  
22 responsive to her environment and was able to take  
23 some feeds, so that is another thing, so it is a  
24 relative term.  
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Q. All right. I think the only point I want to make was that because as Mr. Scott mentioned on more than one occasion lawyers tend to be simplistic. I just wanted you to confirm for us that your characterization of "stable" does not necessarily mean out of the woods.

A. Oh, absolutely not.

Q. And as you have told us, having regard to the picture presented in this record, the shunt was open to a thrombus at any time.

A. I think that was a risk obviously.

Q. And in any event one's impression of her post operative course the fact that death occurred or may have occurred as a result of an occlusion of the shunt is a reasonable one?

A. Yes, I think it would - yes, it was.

Q. And in terms of your characterization of Stephanie Lombardo's death you were swayed by the digoxin information? Correct?

A. That is correct.

Q. That ---

A. And the fact that I do not have autopsy information to confirm the shunt one way





1  
2 or the other.

3 Q. Right.

4 A. That would be extremely  
5 helpful.

6 Q. And that fact, namely the  
7 digoxin information as well as the autopsy information,  
8 you acknowledge was not available to the clinicians  
at the time?

9 A. That is correct.

10 Q. And their impression in its  
11 absence you told us was reasonable?

12 A. Yes, I think it was.

13 Q. Now the second death in  
14 terms of time with which I would like to deal, the  
15 second one that you have characterized as being  
16 reasonably probably likely due to digoxin poisoning,  
17 is Baby Belanger, and that baby died I believe December  
28, 1980.

18 Do you have the Hospital record for  
19 that child? It is Exhibit No. 79.

20 A. Okay.

21 Q. Now again, and I am referring  
22 to your report, Dr. Kauffman, Exhibit 266, it is  
23 clear that is again in relation to Jesse Belanger  
24 that a critical feature to your opinion concerning  
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that child is the digoxin information?

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A. Yes, I think it was.

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Q. Again having regard to the fact there were positive findings for digoxin in a child for whom it was not prescribed?

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A. That is correct.

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Q. And again, and I am going back to the questions put to you by Miss Cronk in your examination in chief, you were aware as given by Dr. Rowe that the clinicians at the time felt that this child's death was due to his general condition?

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A. Did I ---

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Q. I believe you acknowledged that.

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A. I think I probably did, but I don't know what I actually said. Do you have the reference there?

17

18

A. I think I do. I believe it is in Volume No. 71, 5580.

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MS. CRONK: I am not sure, your question perhaps implies that the Doctor knew at the time that he was assessing the case. He knew it when I told him.

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MR. ORTVED: Oh, okay. That is what I was speaking of.







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THE WITNESS: Which was your  
question?

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MR. ORTVED: Q. That Miss Cronk told  
you of what the clinician's evidence had been concerning  
his general condition being the cause of death and  
that was something that you went on to say you felt  
was consistent with what you saw in this child.  
Right?

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A. Yes, I agree with that.

Q. I just want to follow that

up very briefly in terms of the basis for that. I  
would ask you to turn to page 58 of the record.

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A. 58 of the Hospital record?

Q. 58 of the Hospital record.

You will see the entry at the top of the page, Dr.  
Kauffman, "Cardiology, put on O2 abbreviated shunt  
murmur".

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A. Yes, I see that.

Q. And you will know better than  
I, but I understand that the reference to abbreviated  
shunt murmur is again a less than optimal finding  
in a child in whom a shunt has been installed?

A. That is apparently according  
to the little diagram they drew, the shunt was  
producing a murmur for a shorter duration of systole





1  
2 than they would have liked.

5 3 Q. Precisely. And that as I  
4 understand it can indicate that the shunt is perhaps  
5 too small but by the same token perhaps too large?

6 A. I can't respond to that. I  
7 am not sure.

8 Q. All right. You will recall  
9 in any event that when you reviewed this particular  
10 Hospital record it revealed that rather than being  
11 returned to the ward from the Intensive Care Unit  
12 the child went to the Neonatal Intensive Care Unit.  
13 Do you recall that?

14 A. Was that the 7A - Ward 7A or  
15 B?

16 Q. Yes. On the seventh floor.

17 A. Yes.

18 Q. And then if you will turn to  
19 page 62 of the Hospital record there is a note  
20 referring to the transfer from 7G, the Neonatal  
21 Intensive Care Unit to the ward. Do you see that?

22 A. Right.

23 Q. And one of the references  
24 concerning the condition of the child at the time  
25 of his transfer down to the ward was in the second  
last line, "Collapsed left lung".





1

2

A. Right.

3

Q. There are, as I understand it,

4

having regard to the reference concerning respirations

5

and the fact that the liver was somewhat extended,

6

indications of possible early congestive heart

7

failure?

8

A. Well, it was either -

9

apparently it was unclear to them whether the liver

10

was down because of congestive failure or the problem

11

with the lungs, hyperexpansion of the lungs may be

12

pushing the liver down. I got the impression they

13

were not sure right then which was causing it, but

14

the liver was noticed to be down further than they

15

thought it should be.

16

Q. Do you agree in your review of

17

the chart there was a concern about possible early

18

congestive heart failure?

19

A. I don't recall that right now.

20

I may have been aware of it at an earlier time. I

21

don't see it on the chart.

22

Q. All right. You agree that in

23

essence the finding concerning the liver may provide

24

a basis for that?

25

A. Yes.

Q. For that impression?







1

2

A. Yes, it may be a sign of  
congestive failure.

3

4

Q. Then I take it and I think  
you confirmed this earlier, you recalled that on  
autopsy there were findings consistent with a partial  
Di George Syndrome in this child?

5

6

7

A. Yes.

8

9

Q. And you have told us already  
that the terminal event was compatible with this  
child's disease?

10

11

A. With the heart disease?

12

Q. Yes.

13

A. Yes.

14

Q. And you told us also that you  
were taken by its suddenness?

15

A. Yes.

16

17

Q. I take it you are prepared  
to agree that a Di George Syndrome can lead to that  
sudden death?

18

19

A. I don't consider myself an  
expert in Di George Syndrome, but from what little I  
know about it it can be associated with sudden death  
in infants.

20

21

22

23

Q. And so also having regard to  
the respiratory difficulties experienced by this child

24

25





1  
2 I take it that you agree with me that that type of  
3 condition can pre-dispose a child to hypoxic  
4 episodes, respiratory distress?

5 A. Yes. This baby apparently had  
6 some atelectasis in his lungs, the upper lobes, which  
7 means that some of the lobules or lobes of the lungs  
8 weren't expanded with air, and in a baby who is  
9 already compromised like this baby was in terms of  
10 oxygenation, a decreased lung volume will make things  
even worse.

11 Q. Again, and I am reviewing,  
12 you were swayed by the objective evidence of digoxin  
13 in this child?

14 A. That was an important piece  
15 of information.

16 Q. Again that was a fact not  
17 known to the clinicians at the time?

18 A. That is my understanding, yes.

19 Q. And their perception as to  
20 the explanations for the cause of death is one that  
21 is not without foundation having regard to your  
22 analysis of the Hospital record?

23 A. Had I been there at the time  
24 I can't say that I would not have come to a different  
25 would not have come to the same conclusion they did.

- - - -





D/BM/ak

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Q. Right. Thirdly and finally

I would like to deal very briefly with the Estrella child, Dr. Kauffman. I don't think you probably have to have the record placed in front of you for this. That is a death which occurred January 11th, 1981 and that is a death which you have told us you were not able to express an opinion as to whether or not it was reasonably probably due to digoxin poisoning.

A. Yes, I agree with you.

Q. And I take it from your very extensive review of this child and this child's death are aware of its condition in the period prior to its ultimate demise.

A. Yes.

Q. And I will particularize it briefly, but I mean, this child was in very severe distress. Would that be fair?

A. I think that is true. She had very bad anatomical heart disease and she was suffering from progressive congestive failure that really wasn't responding to medical management adequately.

Q. And was not only intractable but was severe?

A. Yes.

Q. And her nutritional status was







D2

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2

very bad?

3

A. I would agree with that from

4

what I saw on the chart.

5

Q. She had, in the period of her

6

last admission, experienced seizures, respiratory

7

arrest, some bradycardia, correct?

8

A. Yes.

9

Q. On autopsy there was positive

10

finding for pneumonia.

11

A. I don't remember that

specifically.

12

Q. All right.

13

A. But I haven't looked at the

14

autopsy report recently.

15

Q. All right, you don't quarrel

with that?

16

A. No.

17

Q. And certainly the pathology was

18

certainly adequate to explain this child's death

19

absent any digoxin.

20

A. I think just being presented

21

her case without any other corroborative information

22

I would conclude that her severe heart disease was

23

consistent with her dying some time during early in

24

life. You can't say when.

25





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Q. Right. So, all of the other deaths to which you have assigned a rating of reasonably probably likely due to digoxin intoxication ---

MS. CRONK: Sir, I'm sorry, again, I don't mean to interrupt my friend but that is the fifth time that I have heard reasonably probably likely and I confess I have no idea what that means. I thought I did understand what the doctor had explained to be his categorization of these deaths. If Mr. Ortved thinks it means something else maybe it should be clarified. He's got me nervous, sir, it is early in the morning and I don't know what reasonably probably likely means.

THE WITNESS: I don't know either, that's why I chuckled a minute ago.

THE COMMISSIONER: Certainly not certain.

THE WITNESS: Certainly not certain, that is correct.

MR. ORTVED: I am not entirely happy with that wording myself but the only reason I am using it is because you used it, so, that is why I decided I would adopt it.

THE WITNESS: Did I use them altogether in that sequence?





D4

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MR. ORTVED: Q. That's what I  
understand.

4

A. Can you point me to that?

5

Q. Let me just find the reference.

6

It is 5868.

7

THE COMMISSIONER: What volume now,  
please?

8

9

MR. ORTVED: 5868 and of course I  
don't have the volume. But it's probably 70 - no,  
71.

10

11

THE COMMISSIONER: No, it is 72.

12

MS. CRONK: 72, sir.

13

MR. ORTVED: You're right, 72.

14

THE COMMISSIONER: 5878?

15

MR. ORTVED: 5868.

16

MS. CRONK: Reasonable probability  
is the language I see.

17

THE WITNESS: 5868?

18

MR. ORTVED: Now, you are not going  
to tell me that is different?

20

MS. CRONK: Well, maybe it is.

21

MR. ORTVED: Well, that is what I  
was trying to incorporate in my question. Let me  
just read the reference to it.

23

24

THE WITNESS: I think what I said was

25





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a little better grammar than reasonably probably likely.

MR. ORTVED: Okay. Well, you are the boss.

THE WITNESS: Who are we talking about here at this point?

MR. ORTVED: Q. Just so that we understand one another, Doctor, let us read the evidence. This is at Volume No. 78, page No. 5868:

"Obviously, Doctor, there are without showing any particular brilliance at this time of day,..."

Now, that may have been before 10:00 too, Doctor.

"...Doctor, three ratings within those two extremes. May we fairly infer from the ratings which you have outlined on page 3 of this letter that any death with the rating of 3 or more in your judgment was a case where there was a reasonable probability that death had resulted from digoxin intoxication?

A. There was certainly a possibility, and I suppose you could call it a reasonable probability, yes.

Q. 3 or more?







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"A. 3 or more. I would certainly agree that those with ratings 2 and 1 I really considered a very low probability, and I am not sure that realistically I can differentiate between 2 and 1, but I had to use up the numbers."

And I understand now why Miss Cronk was upset because it was her words I was torturing and not yours. The deaths which I want to deal and I hope I have been dealing are those in the case of Belanger and Lombardo where you felt there was a reasonable probability of death due to digoxin intoxication.

I am suggesting to you, and I don't think there is any issue about this, that all of the other deaths to which you assign that category 3 or more, namely, a reasonable probability of digoxin intoxication, 5 in number, occurred in March of 1981; agreed?

A. I wasn't aware of that.

Q. All right.

A. But I wouldn't argue with you.

Q. Well, the other five are Hines, Miller, Inwood, Pacsai and Cook and will you take it from me for the moment that those all occurred in





1

2

March of 1981?

3

4

A. I will accept that unless  
somebody else corrects me.

5

6

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Q. Right. They sure will if I'm  
wrong. That being the case, looking at all of the  
deaths you reviewed, and you have told us the 37 and  
40 deaths respectively that I know are the same, but  
having regard to all of the deaths that you reviewed  
up to March of 1981, the only ones that you are  
prepared to say that there was a reasonable probability  
of death due to digoxin intoxication, namely, Lombardo  
and Belanger, that there was an acceptable basis for  
an alternative view, correct?

14

A. At that time?

15

Q. Right.

16

A. Not at the time I reviewed it  
but at the time they died.

17

18

Q. Precisely, absent the digoxin  
intoxication.

19

20

A. Absent the subsequent informa-  
tion.

21

22

Q. Precisely, there was a reason-  
able basis for an alternative view.

23

A. Yes.

24

Q. And the alternative view was,

25





1  
2 namely, not homicide but death due to natural causes.

3 A. Or complications of their under-  
4 lying illness I would say.

5 Q. Right. And the critical fact  
6 upon which your opinion turns is the digoxin data in  
7 respect of those two children which you acknowledge  
8 was available much later.

9 A. Yes.

10 Q. Now, what I want to do next,  
11 Dr. Kauffman, is just analyze briefly your respective  
12 reports in relation to the report to Mr. Wiley and  
the report to the Centers for Disease Control.

13 As I understand it, in the report to  
14 Mr. Wiley you analyzed 40 cases.

15 A. I looked at information, not  
16 charts on all of them, but I looked at information on  
17 some additional cases more than 40, but I really  
focused on some less than 40.

18 Q. All right. Well, I think I  
19 will have to ask you to clarify that.

20 A. Well, in my second letter I  
21 believe I indicated - maybe I'm wrong - no, I'm sorry,  
22 it is not in this letter. At some point I thought I  
23 had indicated that I reviewed case summaries and any  
24 other information that was provided to me on a larger  
25







1  
2 number of infants, but the ones I really reviewed were  
3 these in the 35 to 40 cases that we are talking about.

4 THE COMMISSIONER: At the very  
5 beginning of your first letter, your first report,  
6 you say that you have reviewed approximately 40 deaths  
7 and has included a review of case summaries as well  
8 as a review of the original charts of 30 of the cases.

9 THE WITNESS: Right, okay, that is  
10 correct.

11 THE COMMISSIONER: And of course you  
12 go on to specifically deal with 10.

13 THE WITNESS: Right.

14 MR. ORTVÉD: Q. The reference that  
15 the Commissioner has put to you is the one that I have  
16 been going by and that's why I took the number 40.

17 A. The first letter, yes.

18 Q. Were there cases in addition  
19 to the 40 that you reviewed however summarily?

20 A. I can't document it for you.  
21 Now, I think I reviewed all of the case reports  
22 prepared by Dr. Hastreiter which may have included  
23 some additional cases.

24 Q. That's right.

25 A. But I didn't spend much time  
with them because there was really no pertinent





1  
2 digoxin data that was helpful to me, so, I didn't  
3 focus on them.

4 Q. That's fair. So, you more or  
5 less focused on 40 and you concentrated for the  
6 purposes of your report to Mr. Wiley upon an analysis  
7 from a pharmacologic point of view?

8 A. That is correct.

9 Q. Also bearing in mind the  
10 clinical picture of those children as they presented.

11 A. That's right.

12 Q. And you were able to determine  
13 that there was objective evidence providing a basis  
14 for an expression of opinion on your part in 10 of  
those cases?

15 A. I think that was correct.

16 Q. And that is to say, and this  
17 is about the extent of my mathematical ability, there  
18 are 30 cases in which you weren't able to express  
such an opinion; 30 of the 40.

19 A. I think that I indicated I  
20 didn't have enough information to really express an  
21 opinion, yes.

22 Q. Right. And that would be in  
23 30 of the 40?

24 A. Yes. I don't know if it was  
25





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exactly 40, I said approximately 40.

3

Q. All right.

4

A. But it is approximately 40.

5

Q. And that is to say that

6

objectively, to use your words, and I hope I am being  
fair that there was no objective evidence of digoxin  
toxicity in those approximately 30 cases.

8

A. I think that is a fair representation of my wording.

9

10

Q. And in the 10 cases in which  
you did feel competent to express an opinion, having  
regard to the information available to you, in your  
view seven cases supported an opinion that death  
due to digoxin intoxication was a reasonable  
probability.

11

12

13

14

15

A. Yes.

16

Q. Three did not.

17

A. I think that is correct.

18

Q. So, therefore, we have a

19

total of approximately 30 plus another 3. So,

20

approximately 33 cases in which there is no objective  
evidence of death due to digoxin intoxication.

21

22

A. I just didn't have enough to  
work with.

23

Q. Right. And as I guess it comes

24

25





1  
2  
3 as no surprise to any of us here, that analysis and  
4 those conclusions tie in precisely with your analysis  
5 done for the Centers for Disease Control.

6 A. I don't think there are any  
7 substantive differences; not that I intended it that  
8 way because I did them independently at different  
9 times and in different ways but it turns out that I  
10 came to approximately the same conclusion both times.

11 Q. Happily?

12 A. Pardon?

13 Q. Happily?

14 A. Well, I was relieved when I  
15 saw what happened when they showed me the tabulated  
16 data later on. I didn't realize at the time I was doing  
17 it it was going to turn out that way.

18 Q. All right. In any event, in  
19 the analysis you did for the Centers for Disease  
20 Control you looked at 37 children?

21 A. That is correct.

22 Q. And it was again the same type  
23 of analysis, namely, from a pharmacological viewpoint  
24 but taking into account the clinical picture, along  
25 with the other data.

A. Yes.

Q. And there you were asked to







1  
2  
3 assign numbers about which you have told us you had  
4 these reservations, and I won't go into those. But  
5 we have now canvassed the fact that in seven of those  
6 cases, seven of the 37, you felt competent in applying  
a number of 3 and up.

7 A. Yes.

8 Q. Namely, a reasonable probability  
9 of death due to digoxin intoxication.

10 A. Yes.

11 Q. That is to say, 30 you assigned  
12 one or two, namely, low probability of death due to  
digoxin intoxication?

13 A. I think we added it up the  
14 other day, it was 26.

15 Q. Well now, be careful because  
16 if you look at 37 cases and you have assigned a 3 and  
17 up to 7 of them.

18 A. Well, there are 36 that you  
19 are concerned with here, one of them isn't a part of  
this group of babies.

20 Q. Oh, all right.

21 A. So, there are 36 and then if  
22 you subtract the 7 that you have alluded to from  
23 those 36 you should get I believe the number, the  
24 sum of those that were given either a 1 or 2 rating  
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on the CDC scale. I haven't added this up but I think that would be the way it would come out. Do you have the summary sheet there?

Q. It should be 29, shouldn't it?

A. You may be right.

Q. I mean, my mathematics isn't the greatest but 36 minus 7 comes to 29.

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THE COMMISSIONER: We are now - I think  
you are referring to Exhibit 275 which is your criteria.

THE WITNESS: Right.

THE COMMISSIONER: For the rating,  
and that is - but those were in Group 1, but we also  
have --

MR. ORTVED: Group 2.

THE COMMISSIONER: Group 2.

MR. ORTVED: Right.

THE WITNESS: If you subtract Group 1  
and Group 2 from the original 36 --

MR. ORTVED: Q. You get 29.

MS. CRONK: You get 7.

MR. ORTVED: Oh, yes, you get 7.

THE WITNESS: Yes.

MR. ORTVED: Q. That leaves 29 in  
Groups 1 and 2.

A. I believe you are right.

Q. Okay.

A. And if you added one that we  
are not considering here it would be 30.

Q. That is what I thought.

A. Okay.

Q. And we have the same 7 that  
are given a 3, are the same 7 that you felt you could







E.2

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comment positively upon in terms of a reasonable

3

probability of digoxin intoxication, to Mr. Wiley?

4

A. Yes.

5

Q. And you went on to tell us

6

that of the 29 or 30 whatever in the 1 and 2 category,  
you felt comfortable in stating that 20 of those, in

7

20 of those cases you can exclude the possibility of

8

digoxin intoxication?

9

A. I didn't say that. I don't

10

want you to misinterpret - you are talking about the

11

CDC Report now?

12

Q. Yes.

13

A. I don't want you to misinterpret

14

the implications of my rating. As I think I tried to  
say the other day that if a baby received a low rating

15

from me it meant either way there was no pharmacological

16

information to, with which to value the case, or

17

there was information which indicated to me that it

18

was highly unlikely that digoxin intoxication existed.

19

Q. All right. Now, I just want

20

to co-ordinate your two respective reports, because

21

there is one or two cases that are not common, and I  
am not going to go into them in detail.

22

For instance, in your CDC analysis,

23

you have told us that you assigned a 2 to both Babies

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Gage and Baby Gionas; is that correct?

A. I think that is correct.

Q. And you explained to us, on Wednesday last, your basis for assigning a 2 to those children, and believe me, Mr. Commissioner, you may rest assured I won't go through that again.

You also stated, and it is at page 5905.

A. Of Volume 72?

Q. Of Volume 72, when Miss Cronk then went back over the ratings assigned to Babies Gage and Gionas and you concluded by saying:

"I should say that while I am doing the search I really viewed the rankings of 1 and 2 as being children with which there was very little confidence that digoxin was indeed related to their death."

Correct?

A. That is correct, I don't see where you are reading but I agree with you.

Q. Volume 72, it is the last sentence on page 5905.

A. Okay.

Q. And you also told Miss Cronk





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in reporting to Mr. Wiley you did not include Babies Gage and Gionas because you felt there was insufficient data on which you could relate to their deaths?

A. That is correct.

Q. 2 you also assigned to Baby Estrella?

A. Eventually, yes.

Q. And you have explained that rationale in your report to Mr. Wiley and I don't intend to canvass that again. Then if you could look to Exhibits 273 and 274.

A. Are those the tabulations of the --

Q. I think Mr. Elliot has those out for you.

A. Okay.

Q. You have in those two exhibits, Dr. Kauffman, in the summaries under "Cause of digoxin intoxication" for Janice Estrella --

A. You are talking about 273?

Q. I am talking about both.

A. Okay.

Q. Let us talk about 273 first; under "Cause of digoxin intoxication" opposite Janice Estrella you have:





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"Acute Event (single overdose)",  
do you see that?

A. Right.

Q. And so also on Exhibit No. 274,  
Dr. Kauffman, opposite Janice Estrella, under the  
heading: "Cause of digoxin intoxication" you have:

"Acute Event - single overdose",  
correct?

A. Right.

Q. That is a reflection of what  
appears in your rating sheet in Exhibit 272?

A. That is correct.

Q. But as I understand it Janice  
Estrella, which is in my package here the No. 02044,  
it appears to me that your selection of: "Cause of  
digoxin intoxication", "Acute Event - single overdose",  
was likely made at the same time that you assigned a  
5, namely on the first run-through of that case,  
would that be correct?

A. That is correct. And when I  
received the additional information and changed the  
rating I did not change the other parts and so that  
is in error.

Q. That is what I was going to  
say.







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A. Yes. I neglected to change the comments. I changed the comments portion on none of the ones that I called and changed the rating on. So the comments reflect my original evaluation based on an erroneous assumption of digoxin only.

Q. So if today we were to be running through your rating sheet in relation to Janice Estrella, I take it, and I am actually going by your rating relation to the Gionas child, your probable selection under "Cause of Digoxin Intoxication" would probably be what "Not Applicable"?

A. You are on the second page?

Q. Yes.

A. Did digoxin intoxication appear to be the result of?

Q. Yes.

A. I would probably have either scored it "Unable to Determine" or "Not Applicable".

Q. Having regard to the fact that you indicate that you really can't conclude with any likelihood, with any certainty that the child was overdosed with digoxin "Unable to Determine" may not be as applicable as "Not Applicable", would you agree with me?

A. I would agree with you.





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3 Q. And I think "Not Applicable" is  
4 probably a better category having regard to, for  
5 instance, your application of that term to the  
6 Gionas child, which as I understand it, the cases  
7 really having regard to your analysis, were not  
8 so different.

9 A. They were not identical, but  
10 in looking at them in the overall context and having  
11 to take into consideration the problems with the  
12 Estrella post mortem sample, I would not distinguish  
13 them on the basis of those criteria.

14 Q. So while Exhibits 274 and 273  
15 are an accurate reflection of what appears in Exhibit  
16 272, in terms of your present opinion the entry  
17 opposite Estrella should probably read, I am suggesting,  
18 "Not Applicable".

19 A. I would revise that, yes.

20 Q. Thank you.

21 A. Today I would.

22 Q. The only other cases that are  
23 not common to your reports to Mr. Wiley, to the  
24 Centers for Disease Control are Woodcock and Onofre,  
25 upon which you felt unable to report to Mr. Wiley,  
but you explained why you couldn't express an opinion  
and that is reflected in the Centers for Disease





1  
2 Control report where you assigned No. 1, correct?

3 A. That's correct.

4 Q. Doctor, I spoke to you just  
5 briefly last night and you indicated, as I understood  
6 to be the case, that post mortem digoxin analysis is  
7 not a common place event in hospitals in North America  
8 today other than the Hospital for Sick Children, would  
9 that be correct?

10 A. I think what you asked me was,  
11 did we do it routinely in our Hospital and I said, no.

12 Q. Yes. And as I understand it  
13 your Hospital is reflective of other hospitals on the  
14 Continent, other than the Hospital for Sick Children?

15 A. I don't know how reflective  
16 it is. I don't know what happens, what the policy is  
17 at other children's hospitals, I know I wouldn't  
18 compare it to other general hospitals. It is a tertiary  
19 referral children's hospital associated with the  
20 University, and in that way it is comparable to the  
21 Hospital for Sick Children, and it is comparable to  
22 a number of other children's hospitals in North  
23 America. In terms of what other children's hospitals  
24 policies are about doing toxicology studies routinely  
25 at autopsies I have no idea. I can tell you that  
digoxin measurements are not routinely done at autopsy







1  
2 in our hospital.

3 Q. This is a subject about which  
4 I thought you would probably be more knowledgeable  
5 than I, maybe you say you are not. It is my informa-  
6 tion that routine post mortem toxicology analysis,  
7 and in particular analysis in relation to digoxin are  
8 not done in hospitals in this Continent save and  
9 except for the Hospital for Sick Children, do you  
10 disagree?

11 A. I think I can answer that in  
12 general. I think that it is impractical to do an  
13 full toxicological workout on every autopsy, it is  
14 just not practical. So in my experience toxicology  
15 evaluations have usually been done for patients in  
16 whom there was some reason to believe it might be  
17 useful as a part of the autopsy. If you were going to  
18 do routine drug assays, how would you know which one  
19 to choose anyway?

20 Q. That was going to be my next  
21 question.

22 A. I don't know how, if I was,  
23 say we were going to routinely do drug assays in  
24 autopsies, I would just - open ended like that, I  
25 would not know where to start unless you did a  
complete toxicologic workout and that is inordinately





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expensive.

Q. And impractical?

A. Pardon?

Q. And impractical?

A. It's impractical because of the time and resources involved.

Q. Precisely. Yet as you have also been very fair in confirming for us, in the absence of - for instance, a post mortem test for digoxin, it is very difficult to say whether a particular death may or may not be due to digoxin intoxication; or in a cardiac patient underlying heart disease.

A. Unless you have documentation that an overdose did indeed occur.

Q. Well obviously, but absent that.

A. But absent that, particularly if the child was never known to have been given digoxin therapeutically, I wouldn't think one would particularly suspect it unless there were other extenuating circumstances to suggest it.

Q. And I take it that you as a pediatrician responsible for patients in a children's hospital look upon all of this; if in fact a murder





1  
2  
3 occurred with a quality of "There but for the Grace  
4 of God go I".

5 A. I don't know how to respond  
6 to that question. Obviously we never want adverse  
7 things to happen to our patients. I am not too sure  
8 what you are implying, but we all run a fair amount  
9 of risk when we practise medicine. Part of it we  
10 think coming from your profession, but I won't pursue  
11 that.

12 Q. My only point is this, if in  
13 fact there were deliberate overdoses of digoxin  
14 administered at the Hospital for Sick Children,  
15 Dr. Kauffman, which you feel was a reasonable  
16 probability in at least seven cases.

17 A. Correct. I think there is  
18 a reasonable probability of overdose, yes.  
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Q. Right. If that occurred assuming it were intentional for the moment it is the sort of thing that could strike anywhere? Correct?

A. I think I would have to agree that any institution is susceptible to that kind of activity. For example, regardless of the careful precautions we take we have had things happen like babies admitted for child abuse actually sustaining broken bones in the Hospital under our care because a visitor mistreated them no matter how hard we tried to protect them. So I think we are always susceptible to some bad behaviour by somebody if such people decide to do something.

Q. And the distinction between intentional overdose of a drug digoxin, if in fact that occurred, and additional abuse to a previously abused child, the overdosing of digoxin may remain masked having regard to its very mimicking symptoms for a longer time?

A. I think that your level of suspicion would be much lower in the case of digoxin you describe. I assume you are talking about patients that we are considering here, patients with severe heart disease who are relatively high risk because of







1  
2 their condition and have symptoms that could be  
3 compatible with a number of things.

4 I think it would be less easy to  
5 discern under those conditions what the cause was  
6 than if you had a child who you know you had admitted  
7 because you knew they may have been abused and so  
8 you were watching carefully, and if something as  
9 obvious as a fracture occurs you know that it has  
indeed occurred.

2 10 MR. ORTVED: Thank you very much,  
11 Doctor.

12 THE COMMISSIONER: Thank you, Mr.  
13 Ortved.

Miss Symes?

14 CROSS-EXAMINATION BY MS. SYMES:

15 Q. Dr. Kauffman, my name is  
16 Beth Symes and represent the Registered Nurses  
17 Association of Ontario and 38 individual nurses who  
18 are involved in this case.

19 Dr. Kauffman, I gather that when you  
20 were retained by the Police and by the Crown Attorney  
21 prior to August of 1972 you had no prior knowledge of  
the cases?

22 A. I had a very vague knowledge  
23 that something unfortunate had happened at the  
24  
25





Kauffman, cr.ex.  
(Symes)

1  
2 Hospital for Sick Children but I knew nothing beyond  
3 that.

4 Q. Did you know, for example,  
5 that a nurse had been charged with murder of four  
6 of those children?

7 A. No, I did not until I arrived  
8 in Toronto and was provided - that was among a lot  
9 of other information. I think I actually became  
10 aware of that when I read the Vanek - I don't know  
11 the name of the document.

12 Q. Reasons for Judgment?

13 A. Yes, Reasons for Judgment.

14 Q. And when did you receive those?

15 A. I don't remember, but it was  
16 some time - I think those were sent to me shortly  
17 after my first visit to Toronto.

18 Q. So you would have had the  
19 Reasons of His Honour Judge Vanek before you did  
20 either the Police Report or the CDC rating?

21 A. Yes. I reviewed a lot of  
22 background information prior to that.

23 Q. And I gather that when you  
24 attended that meeting on August the 27th, 1982  
25 here in Toronto you knew that the Police were  
investigating homicide?





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A. Yes, I did.

3

Q. And that you were going to be

4

part of the ongoing investigation?

5

A. Well, I didn't realize I was

6

going to be a part of an ongoing investigation. I

7

wasn't sure at that point what I was going to eventually  
do. Had I known I probably would not have come.

8

Q. Nevertheless when you committed

9

yourself it became quickly apparent that in fact you

10

were part of an ongoing investigation?

11

A. I was aware quickly that I was

12

going to be asked for expert medical advice that would  
be used in making decisions about an investigation.

13

Q. And we know that there was

14

a meeting on September 13th of a number of people

15

who were present at the August 27th meeting, and

16

we know - we have had as an exhibit, Exhibit 261,

17

the fact that minutes were kept of that meeting of

18

September 13th, 1982.

19

Were you invited to that meeting?

20

A. I don't remember for sure,

but as I ---

21

Q. You didn't attend the meeting

22

apparently?

23

A. No, as I recall I was asked

24

25





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2

to attend and I had a conflict and I did not attend.

3

Q. Dr. Kauffman, did you ever

4

see those minutes?

5

5

A. No, I did not.

6

Q. At any time?

7

A. At any time. This is the

first time I have seen them and I haven't read them.

8

Q. I gathered that you said

9

that ---

10

A. I never did see any minutes

11

of any of those meetings until this hearing this  
week.

12

13

Q. Were you informed of the

contents of the meeting of September 13th by anyone?

14

A. No.

15

Q. You said that you had had

16

Dr. Hastreiter's case summaries to assist you in  
your work?

17

18

A. That is correct.

19

Q. And did you have his case

summaries before you came up to Toronto on November  
19, 1982, to do your chart review?

20

21

A. Yes, I did.

22

Q. Were you aware of his opinion

with respect to the cause of death then of the babies?

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A. To the extent that at the bottom of some of the forms he had checked a poor, good, fair, good or something like that. I didn't pay much attention to that because I immediately disagreed with some of them so I just discarded that.

I may have picked up something from that but I don't consciously recall paying any attention to those scores. Other than that I was not aware of his overall opinion.

Q. Were you aware ---

THE COMMISSIONER: Excuse me, his case summaries?

THE WITNESS: Yes.

THE COMMISSIONER: Are they the case summaries that we have?

MS. CRONK: What has been referred to as Dr. Hastreiter's report.

THE COMMISSIONER: Yes.

MS. CRONK: It is in fact a compilation of individual case numbers.

THE COMMISSIONER: Well, did he have some sort of code on those?

THE WITNESS: May I show you what I was referring to?

THE COMMISSIONER: Yes. We can't have





1  
2 a private conversation. It is against the rules,  
3 but you are saying ---

4 MS. CRONK: If you look at Exhibit  
5 264 which has been marked before you, you will see  
6 at the bottom of each individual child's sheet a  
7 space for categorization as to probability of massive  
8 digoxin overdose.

9 The categories are small, fair and  
10 good.

11 THE COMMISSIONER: Where are these?

12 MS. CRONK: At the bottom of each  
13 child's sheet. Pick any child and on the bottom of  
14 the cover page for that child ---

15 THE COMMISSIONER: Oh, yes, I see it.

16 MS. CRONK: You will see the  
17 categorization.

18 THE COMMISSIONER: Yes, I see it.  
19 Thank you.

20 THE WITNESS: That is what I was  
21 referring to.

22 THE COMMISSIONER: Exhibit 264.

23 MS. SYMES: Q. You had those then  
24 before you came here on November 19th, 1982?

25 A. That is correct.

Q. And before you came on November





1  
2 19th, 1982 did you know - had you had any discussion  
3 with either the Crown Attorney or the Police as to  
4 which of the 36 babies were in their opinion  
5 suspicious or most suspicious, whatever terminology.

6 A. I had asked them to facilitate  
7 my review and to make most efficient use  
8 or my time which ones they would like me to review  
9 in detail first, and in that sense they gave me a  
10 list of 8 or 10 that they wanted me to look at.

11 Q. Most particularly?

12 A. Yes.

13 Q. You told us in fact you  
14 divided that single day not equally amongst 36?

15 A. No, I am not talking about that  
16 day, I am talking about earlier. Early on I talked  
17 with Mr. Wiley and some of the police staff and I  
18 asked them for some - because we had a large number  
19 of babies and I said give me some priority list and  
20 I will look at those first. And so I got a list of,  
21 I don't remember how many, but 8 or 10 babies that  
22 they wanted me to look at first.

23 Q. If I look at Exhibit 273,  
24 it is one of the summaries that Commission Counsel  
25 has prepared of your gradings.

Dr. Kauffman, do those babies that





1  
2 you were to look at those particularly all appear on  
3 273?

4 A. I suspect they do, but unless  
5 I could find, dig out that handwritten note and  
6 compare them I couldn't tell you exactly with  
7 certainty, but I suspect that they are among these  
8 36 babies listed here, yes.

9 Q. Do you have them with you?

10 A. I may have and it will take  
11 me a while to dig. I can look for it - I would be  
12 willing to look for it if you wish.

13 Q. Could I ask you if perhaps  
14 you do have time at the break, but I would ask you  
15 from your memory are the 8 that you were - it was  
16 either 8 or 10?

17 A. Yes. I don't remember for  
18 sure.

19 Q. Were all of those in ratings  
20 2 to 5 inclusive?

21 THE COMMISSIONER: I have a problem.  
22 I understood this is what Mr. Wiley wanted you to  
23 look at and this really has nothing to do with the  
24 Atlanta Report. I would have thought that the  
25 appropriate question is are those the babies that are  
included in your report to Mr. Wiley?







1  
2 MS. SYMES: Well, I don't know that  
3 and I just want - I just used 273 as a relatively  
4 handy list of the children involved.

10 THE WITNESS: I would really rather  
5 answer these questions for you accurately and see  
6 if I can find some documentation to give you an  
7 accurate answer before I respond.

8 MS. SYMES: Could I just leave that  
9 then?

10 A. Yes, let's come back to it.

11 Q. And if we have our 20 minute  
12 break I will ask you ---

13 A. Right. I would be happy to do  
14 that.

15 Q. Dr. Kauffman, have you ever  
16 before in your career participated in a rating of  
17 clinical records on the basis of pharmacological  
evidence?

18 A. Not in the way I did it this  
19 time, no.

20 Q. Have you ever before been  
21 part of an epidemiological study?

22 A. I am not an epedemiologist.

23 Q. No, I am sorry, have you ever  
24 acted as a consultant in epidemiology?  
25





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A. Yes, I have.

3

Q. And have you ever ---

4

A. I have submitted - I shouldn't have answered no to your previous question.

5

6

I recall now a few years ago I was a consultant to a researcher in Rochester, New York, and I was asked to review a whole series of cases that had to do with medication administrations by mothers, and I did a rating like this and then it was used in an epidemiologic study so I guess I had done it before.

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Q. And other than that have you participated, for example, in rating children for general statistical studies? Epidemiology indicates disease, doesn't it, or trends. How about just a straight statistical study?

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A. Well, I use statistics all the time.

17

18

Q. Have you ever done ---

19

A. You mean ratings?

20

Q. Where you made ratings based on your clinical judgment?

21

22

A. Well, I have published papers on pain and I used rating scales to assess pain.

23

24

25

Q. All right. So then you would





1  
2 be familiar then and would have participated in other  
3 research models, other statistical models?

4 A. Yes, I think I could agree  
5 with that.

6 Q. Now in this particular case  
7 you were I gather not blinded to the names of the  
8 children?

9 A. That is correct.

10 Q. And I gather that an ideal  
11 model would be that you not know the name?

12 A. I think if I were designing  
13 this whole study perspectively I would have rated  
14 them blindly. Unfortunately we didn't have that  
15 luxury.

16 Q. And the reason I gather for  
17 the blinding of the charts or the blinding of you  
18 with respect to the names on the charts is to make  
19 sure that your evidence is not in any way biased or  
20 influenced by previous information?

21 A. That is correct. If you could  
22 do it that way that would be the goal.

23 Q. I gather you were also not  
24 blinded as to the date of death?

25 A. That is correct. In fact that  
was a piece of information I had to have available to





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me to make my assessment.

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Q. Well, would it have made any  
difference if you had been ---

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A. Oh, you mean the date at which  
I see what you mean. The date at which this  
particular individual ---

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Q. Yes, died.

A. No, I was not blinded to

that.

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Q. And would you agree with me  
that that is in an epidemiology study a good  
characteristic to try to build in?

- - - -







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A. You mean the blinding?

Q. The blinding.

A. I think if you are designing an ideal epidemiologic study you want as much blinding as possible to avoid inadvertent bias.

Q. Now, I gather that you were not given your criteria on which to design your observations, that all you were asked to do is use 5 as the greatest degree of probability and 1 as the least degree of probability and Atlanta left it up to you completely what criteria you defined 5 to be, 4 to be, et cetera?

A. That is correct.

Q. And I gather that you have said you had no discussions with the other two consultants who were doing the same process on the same children?

A. Well, they were doing a rating but with very different data.

Q. I quite agree. But I mean, they were trying to rate the children?

A. They were trying to rate the children with different criteria from a different perspective and, you are correct, I had no contact or discussion with them.





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Q. In fact, one of them you said  
you still haven't talked to today.

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A. I have never talked to either  
of them.

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Q. All right. So, you have no  
idea then, I would presume, whether or not the  
standards that you set for 5 correspond to the standards  
that the other two set for 5.

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A. I don't see any reason why they  
would. I mean, it is apples and oranges. I was  
using a different scale, a different approach. In  
fact I think under the circumstances it would not have  
been good for us to attempt to correspond or attempt  
to relate them.

15

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Q. No, but would you agree with  
me that when you define Category 5 it may have had a  
range of probability of, you know, so much, whereas,  
someone else may have defined 5 as a wider one and  
someone else may have defined it even narrower.

19

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22

A. Oh, I agree with that and I  
looked at this carefully. I suspect that all three  
consultants did not agree on various cases and that  
is what I would anticipate.

23

24

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Q. Exactly. Not only might they  
put different cases into Category 5, sir, but mightn't





1  
2 we also have that the three consultants had different  
3 categories 5?

4 A. I'm not sure I am understanding  
5 what you are saying.

6 Q. In terms of width or broadness  
7 or narrowness of category.

8 A. I think if I understand what  
9 you are talking about, any time you use a parametrics  
10 scale, unless you have digital measureable data you  
11 don't ever know for sure whether the range between  
12 one digit and the next is the same as the range  
13 between the next two digits and that is true with  
14 I think any subjective rating scale that is used.  
15 This is, for example in the pain situation I alluded  
16 to, this has been debated for years in the literature.  
17 If we use a linear pain score scale, is a pain index  
18 of 4, the change in pain between 3 and 4 is the same  
19 as between 1 and 2 and nobody knows. Is that what  
20 you are alluding to?

21 Q. Well, the one point is that  
22 the categories are not equal. That is exactly what  
23 you have said.

24 A. They are not equal qualitatively  
25 or quantitatively.

Q. Exactly. And similarly when





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we compare 5, the Category 5 of the three consultants  
there is no reason to assume that in the abstract they  
are the same categories.

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A. I haven't seen the other  
consultant's criteria or scoring but I would in the  
abstract agree with you.

8

9

Q. And in this experimental design  
there was no attempt to make them all equal?

10

11

A. No. In fact, I think there was  
a conscious attempt to not make them equal, to not  
compare them and have them done independently.

12

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Q. But there was no attempt by  
the designer of the experiment to assist you in, say,  
what type of cases should go into 5, for example.

15

16

A. No, and I think it would have  
been inappropriate for them to do so.

17

THE COMMISSIONER: But with everybody  
5 was the top.

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THE WITNESS: Well, to that degree  
they told me 5 was the top of the scale and 1 was the  
bottom of the scale, but I had no guidance one way  
or the other as to how I should distribute the scale,  
whether it should be linear, logarithmic or whatever  
and as to the criteria I should use to assign patients  
to any part of the scale.







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THE COMMISSIONER: Yes, Miss Cronk.

MS. CRONK: Sir, I hadn't risen earlier because I thought Miss Symes would be reaching this and I may be anticipating her, but as you know, the expurgated version of the Atlanta Report has been marked, Exhibit 270, and it is quite clear I suggest on a reading, particularly of pages 11 and 12. If we turn for example simply to Dr. Nadas' approach, and there may be no magic in this, but I am not aware that any particular numerical ranking scheme applied to the assessment that he was asked to make. Certainly his criteria and breakdown is described at pages 11 and 12. It doesn't appear to approach in any sense the kind of ranking exercise that Dr. Kauffman went through. So, it is a little inappropriate perhaps to suggest there was a similarity in a gradation of 5, 4, 3, 2, 1 amongst all the consultants.

THE COMMISSIONER: Well, there was a similarity in the sense that 5 was the most probable, to the least.

MS. CRONK: Well, what I'm suggesting to you, sir, is that is not the exercise that Dr. Nadas went through at all, in my reading of the report. If you take a look at the assessments that he made





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3 and the scorings he made, they didn't have to do with  
4 probability of death caused by digoxin intoxication  
5 in the same sense that Dr. Kauffman's did.

6 THE COMMISSIONER: No, but improbability  
7 of death from natural causes, did they not?

8 MS. CRONK: Well, sir, and again I  
9 don't want to argue the point, we haven't heard from  
10 the authors of Atlanta yet, but if you look at the  
11 bottom of page 12, for example, that is where  
12 Dr. Kauffman's rankings are set out.

13 THE COMMISSIONER: Yes.

14 MS. CRONK: But if you turn back to  
15 page 11 you see at the bottom of the page the criteria  
16 for assessments used by Dr. Nadas and I suggest they  
17 are very different.

18 THE COMMISSIONER: Page 11?

19 MS. CRONK: The bottom of page 11  
20 and the top of page 12. Do you see what I'm saying?

21 THE COMMISSIONER: Well, I think we  
22 can leave this for argument anyway.

23 MS. SYMES: Q. But that is exactly my  
24 point isn't it, Dr. Kauffman, that there was no  
25 attempt to make sure that you were, when you did your  
pharmacologic review, trying to assess things into  
similar categories as the other two consultants?





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A. Well, I can't speak for the other two consultants and I can't speak for the people, the epidemiologists who did this. I simply was asked to do a specific thing in a specific way and I did it and I can't comment for you beyond that, you will have to ask the people who did it.

8

9

Q. But I gather you did it without consultation with the other people, the other two consultants?

10

11

A. Absolutely.

12

13

Q. And you did it without consultation with the Atlanta people in terms of the design of what went into 5, 4, 3, 2, 1.

14

A. In terms of the criteria.

15

Q. In terms of the criteria.

16

A. I wrote those myself.

17

18

19

20

21

Q. Exactly. Now, one of the things that you had said before is that, for example, in your pain study that the rating on a numerical scale of clinical observations is trying to fit information that might I guess not neatly fit into 5 discrete categories.

22

A. That is correct.

23

24

Q. And that the fitting or the pushing into a specific category is a human function

25





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based on judgment.

3

A. I think to an extent that is

4

true, yes.

5

Q. For example, you said you had

6

trouble between 1 and 2 and you put some into 2. One

7

of the things was to use up the numbers.

8

A. Well, I said that facetiously.

9

Q. Yes, I understand.

10

A. But when it finally came down

11

to it I realized that there was probably no real

12

world difference between those two and I gather, I

13

haven't studied the CDC report, but I gather that

14

they came to the same conclusion and lumped all those  
together anyway for all practical purposes.

15

Q. But when you are doing a rating

16

process such as the one you have done there is a

17

question of the degree of reliability in the placing  
of a particular case in a specific category.

18

A. I think there is a real

19

probability of error we have talked about because of

20

the inherent variability in all of these cases, if

21

that is what you're asking.

22

Q. There is a variability in the

23

information and would you also agree that there is a

24

variability in the rater?

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3 A. I think that is true. That's  
4 why I said yesterday I didn't think I could go back  
5 and do the exercise again a year later and do it the  
6 same way.

7 Q. Exactly. So, it is a process  
8 that you do the best job that you can at the particular  
9 time but if you did it at a different time you might  
10 do it differently?

11 A. I might but I think you have  
12 to look - I didn't plan it this way but I think you  
13 have to look at the two exercises I did do at different  
14 times on different days in different ways and my over-  
15 all conclusions, qualitative conclusions came out the  
16 same.

17 Q. All right.

18 A. So, I apparently didn't change  
19 too much in that period of time.

20 Q. Well, you were doing them after  
21 November 19th and I presume you finished by some  
22 time in January?

23 A. Yes.

24 Q. All in the same period of time?

25 A. All what in the same period of  
time?

Q. All within the same two month





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2  
3 period?

4 A. The original - if you are  
5 talking about the police report, my original police  
6 report was written in late December.

7 Q. Yes, after you had examined the  
8 charts in November.

9 A. Right. And then my revision,  
10 which was necessitated by additional information, was  
11 drafted in January, approximately a month after the  
12 December report.

13 Q. Dr. Kauffman, were you asked  
14 to rate the same babies twice as a measure of your  
15 intercase reliability?

16 A. No, I rated them only once.

17 Q. In other statistical designs  
18 such as the one you did on pain, were you given the  
19 assignment of doing this, if blind, doing the same  
20 case twice to see if you agreed with yourself?

21 A. I wasn't rating the pain, I  
22 had a research nurse who was doing it. So that I  
23 wasn't the rater in that situation but she was blinded  
24 to what the patient was receiving for pain and we  
25 didn't have the opportunity in that particular study  
because of the nature of the patients to do simultane-  
ous ratings but what we did do was do three different





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kinds of ratings at the same time on the patient.

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Q. But do you agree that one of the things that helps a design experiment is that if the rater, the single rater is asked to rate the same patient twice unknowingly to see if he is consistent?

8

A. I think that is ideal, yes.

9

10

Q. And do you also agree that it might be helpful that more than one rater rate the same child?

11

12

A. At least that would give you some competence as to the inter-rater variability.

13

14

Q. And that wasn't done in this case?

15

16

A. Not to my knowledge; if it was, I don't have that.

17

Q. You were the only pharmacologist?

18

19

A. To my knowledge nobody else did it but you will have to ask the people who designed the study.

20

21

22

Q. And I gather also when you were doing this rating that all of the babies that you did died; all of the babies that you rated died?

23

24

25

A. I think that was the index system that got them into my pack.





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Q. But we know for example that some of the babies who were on that ward obviously with severe anatomical conditions at that time lived?

A. That is correct.

Q. And you weren't asked to rate those as a comparison or a qualitative check?

A. That is correct, but I am not sure how that would have - I would have to think about how that would have helped because the population from which we were sampling wasn't living babies.

Q. All right.

A. I think you are talking about two different populations from the universe. If one wanted to compare the underlying anatomical defects and the pharmacology of those children, based on the treatment they received, wouldn't it be a legitimate exercise to compare babies with the same anatomical problems, the same kind of treatment who lived with those babies who died?

A. I think if you were designing a perspective, ideal perspective controlled experiment that would be the way to do it.

Q. But it wasn't done in this particular case?

A. Well, we didn't have the luxury







1  
2 of designing a perspective from a controlled experiment.

3 Q. I see. And when you were  
4 doing your ratings then, you knew then that you were  
5 rating the children who had died during the so-called  
6 epidemic period?

7 A. Well, I was aware of the  
8 epidemic period, yes, I didn't pay much attention to  
9 that but I was aware that that was how these babies,  
10 the babies that I was looking at were selected  
11 from a certain time to a certain later time.  
12 I really didn't take that into consideration in terms  
13 of my evaluations of them but I was aware that that  
is how they had been selected.

14 Q. And you were aware then that  
15 they were being investigated by the police for  
16 homicide?

17 A. Well, I was aware that the  
18 police were considering looking at them and consider-  
19 ing whether or not they should proceed.

20 Q. And in addition, and we will  
21 do it at the break, you knew that some of them were  
22 under special consideration and those you focused your  
attention on.

23 A. There was a small list that  
24 they indicated to me was a higher priority to look at  
25





1  
2 initially. I wasn't restricted of course to looking  
3 at all of them, in fact, I was asked to.

4 Q. Dr. Kauffman, do you have any  
5 concerns that your ratings that you gave may have  
6 been affected by this prior knowledge?

7 A. I think any time you have to  
8 do a retrospective assessment like this that I have  
9 concern for the reasons that you have suggested.

10 Q. I am not in any way saying ---

11 MR. YOUNG: Let the witness finish  
12 his answer.

13 MS. SYMES: Would you let me just  
14 complete it.

15 MR. HUNT: No, let him finish his  
16 answer.

17 MR. YOUNG: Well, the witness hasn't  
18 completed either, you asked the question and he  
19 began to answer.

20 THE WITNESS: I think any time you  
21 are forced to do a retrospective assessment, as we  
22 were faced with here, that you have questions because  
23 by nature a retrospective study is open to inadvertent  
24 bias. You just can't control for bias, so, you can  
25 never be sure that your error is randomly distributed.  
There may be biased error. So, what I did was subject  
to that, yes.





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Q. Exactly. I am not in any way quarrelling or casting aspersions on what was obviously a best effort to do that, but I guess we will accept that you do not have a bi-camera mind that the information that you received from all sources, including the ones I have outlined, were present when you made your decision.

A. All of the digoxin data; all of the clinical data; all of the clinical laboratory data, I took that all into consideration.

Q. As well as the fact that the police were investigating these deaths?

A. Well to the extent that I was really aware of it. You know I had no conscious bias based on that, but I can't tell you that I didn't have unconscious bias because we are all susceptible to that.

Q. You had knowledge?

A. I had knowledge, yes.

Q. Now I would like to ask you about patient Cook. I would ask if you would first of all turn to his chart, and also Mr. Cimbura's report, which are 95A to F on Justin Cook.

A. I'm sorry, you said 95A to F?

Q. Our report from Mr. Cimbura --





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THE COMMISSIONER: They are all  
together, I think you will find --

THE WITNESS: Oh, you are talking  
about the report, you are talking about Mr. Cimbura?

MS. SYMES: Mr. Cimbura's report.

A. Okay.

Q. I guess they are multiple?

A. Yes.

Q. We have marked them sub A through  
F.

A. Okay.

Q. And patient Cook's chart.  
First of all looking at 95, we see on the first page,  
which is 95A --

A. I'm sorry, my pages are not  
numbered apparently the same as yours.

THE COMMISSIONER: Take that if you  
would and I will find another one.

MS. SYMES: Q. The report of  
January 11, 1982.

A. Right, thank you.

Q. In Justin Cook's samples that  
were done at the Centre for Forensic Sciences --

THE COMMISSIONER: Would you hang on  
for a moment. Oh, yes. All right.







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MS. SYMES: Q. I have some questions about the tissue samples that were done. We have T42 that the tissue in the jar reported to be a sample of heart muscle, and that digoxin concentration was the one that we are of course most concerned about 117 nanograms per gram of digoxin; do you see that?

A. Yes.

Q. We then move down to T43 in which we have tissue from the lung, and that is 153 nanograms per gram.

A. Right.

Q. Significantly less, obviously.

Would you turn to the next page please, also of patient Cook. We have a sample, we have three samples from the heart. In T11 we have first of all from the ventricle, and we understand that that is 36 nanograms per gram, that is a mixture of digoxin and digoxinlike substances. The concentration of digoxin is 8; do you see where I am reading?

A. Yes, I follow you.

Q. Left atrium we have a digoxin concentration of 39 nanograms per gram of digoxin and/or digoxinlike substances?

A. Yes.

Q. And in the septum we have 36





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nanograms per gram of a mixture of digoxin and digoxinlike substances, and the concentration of digoxin is 4 nanograms per gram.

A. Yes, I am following you.

Q. And similarly in the lung we have a concentration of 32 nanograms per gram of digoxin and digoxinlike substances, and the concentration of digoxin was 15 nanograms per gram.

A. Right.

Q. With the exception, Dr. Kauffman, of T42, the digoxin as analyzed by Dr. Cimbura in the ventricle, left atrium and septum of the heart are all significantly lower, do you agree, than the T42 one, they are completely out of line?

MR. HUNT: I think Mr. Cimbura indicated that one was fresh and the other fixed.

THE WITNESS: Yes, I think there is a good explanation for that and I took that into account when I assessed the case.

MS. SYMES: Q. What is the explanation?

A. To my understanding the T42 sample was fresh autopsy tissue from the heart muscle; and the others had been stored in Klotz fixative for some time prior to taking them out and





1  
H5 2 assaying them. If you look down at the top of page  
3 2 it says:  
4 "Fluid surrounding the tissues. The  
5 fluid is reported to be Klotz fixative  
6 solution.  
7 The fluid was found to contain  
8 29 nanograms per millilitre..."  
9 of this mixture again.  
10 Q. Of digoxin and/or digoxinlike  
11 substances?  
12 A. Right. So I had no problem  
13 with those differences that you pointed out.  
14 Q. So that the concentration of  
15 digoxin in the fixed tissues, which are 8, 4 and 15,  
16 are straight digoxin?  
17 A. Yes.  
18 Q. Would you say that they are  
19 a result of the leaching from the tissue into the  
20 Klotz solution?  
21 A. Well, you have a situation here  
22 where apparently the heart and the lungs were dumped  
23 into one bottle and left to sit on the shelf for  
24 a while in the Klotz solution, so that the decrease in  
25 concentration is probably due to a combination of  
leaching as well as breakdown of the digoxin.





H6

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Q. And in the --

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A. I really paid very little

4

attention to those in assessing Baby Cook.

5

Q. You paid very little attention

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to the fixed tissues?

7

A. To the fixed tissues because

8

I had other data that was much better than that, I  
thought.

9

Q. Which was the T42?

10

A. And the serum concentrations.

11

Q. I am particularly interested

12

in the level of digoxin tissues in the questions I am  
going to be asking you.

13

A. Okay.

14

Q. Now, I believe it was on the

15

first day beginning at 5516, and I don't think you

16

need to refer to it because it is very difficult to

17

do calculations in the air. When you did the calcula-

18

tions --

19

A. You are talking about my

20

testimony now?

21

Q. Yes, sir. -- calculation of

22

minimum dose of digoxin needed to produce --

23

A. I'm sorry, which page?

24

Q. Volume 70, page 5516.

25







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A. 5560 or 5516?

3

Q. 5516.

4

A. 5516, okay.

5

Q. Dr. Kauffman, I am going to

6

in fact ask you if you would essentially do the

7

calculations again but I want to look at the samples,

8

the assumptions pardon me, that you used in coming

to your conclusions.

9

A. Okay.

10

Q. The first one is that this

11

baby I gather we agree got into trouble at 3:45 in

12

the morning. Would you refer then to the patient's

13

chart, and perhaps if we just go through the assump-

tions of what we know about this child.

14

A. Okay. I have the chart.

15

Q. On page 29 of the chart, which

16

are the progress notes, we know that this child then

17

got into trouble at about 3:45, is that right?

18

A. That is correct.

19

Q. And we know that a drug which

20

is charted as propranolol was given .4 millilitres or  
milligrams, is it?

21

A. Millilitres.

22

Q. -- millilitres at 3:45.

23

A. 3:45.

24

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Q. And another dose of propranolol  
was administered --

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A. Right.

5

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Q. -- at 3:55. If we go back  
in fact to 27 we will see that in fact Dr. Kantak  
is the person that we got the exact dose from, that  
is the middle of the page, and you have referred to  
that already. Initially he was given 0.4, this is  
of Inderal; are you back on page 27 in the very centre  
of the page?

11

A. Right.

12

13

14

15

16

Q. -- was given 0.4 millilitres  
to which he did not respond, and then another 0.2  
millilitres was pushed, and we gather that was pushed  
some five to ten minutes later. So he would have had  
the administration of the drug, which I guess totals  
0.6 millilitres, between 3:45 and 3:55.

17

A. I think that is correct.

18

19

20

Q. We then know that the baby  
was given, at some time shortly thereafter, atropine  
and morphine.

21

A. Yes.

22

23

Q. We know then that the Code on  
this baby was called at 4:20.

24

25

A. Right. Approximately 25 to 30





1  
2 minutes later.

3 Q. Yes. We then know that an  
4 arrest procedure was carried out. In the nurse's  
5 notes on page 29 we see that CPR was carried out,  
6 that is the nurse's charting of it?

7 A. Right.

8 Q. And if CPR is carried out,  
9 Dr. Kauffman, I gather that the aim of that is to  
10 maintain circulation?

11 A. Yes, that is the aim.

12 Q. And if we read on the bottom  
13 of page 27 with respect to this arrest --

14 A. Yes.

15 Q. -- I guess it starts towards  
16 the bottom that this atropine 0.2 mg. was giving  
17 good response; the heart rate is 140 per minute; the  
18 anaesthetist is called and at that time the child  
19 displays ventricular fibrillation.

20 A. Right.

21 Q. I gather shock was given with  
22 good results.

23 A. Then she had a blood pressure  
24 noted of 110 momentarily at least.

25 Q. Yes.

26 A. And then she went back into the  
27 fib.





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Q. That would indicate some circulation at least that some heartbeat had been obtained by the resuscitation effort?

A. At least momentarily.

Q, And we know that they stopped some 36 minutes, that is at 4:56 in the morning.

A. That is correct.

Q. And we know that in the middle of that resuscitation, not really in the middle but at 4:30, ten minutes into the resuscitation attempts the serum level was taken and that produced the 72 nanograms per ml. We also know that a further sample was taken at 0600 hours, and I believe that that is 6.

A. That is approximately an hour after the Code was discontinued.

Q. No, sir. Oh yes, an hour after the Code.

A. Is that correct?

Q. Yes, an hour and four minutes after the code.

A. Okay.

Q. And we know then --

A. I'm sorry, I don't know where that second sample was obtained from, I have forgotten.







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Q. I don't know either.

3

A. Do we know?

4

MR. BROWN: I believe that is the  
sample taken from the puncture of the heart.

5

6

MS. SYMES: Q. I will accept  
Mr. Brown's --

7

8

A. I will accept that if nobody  
corrects it.

9

10

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Q. The sample from the puncture of  
the heart. Now, in the calculations of the minimum  
dose which you did for us on the first day, I gather  
that you said in your answers to Mr. Scott yesterday  
that the answers are only as good as the assumptions  
which you made.

14

15

A. I think that is true.

16

17

18

19

Q. And I believe that you said  
yesterday, on the first day, that the information  
that you were using is that the dose is equal to the  
concentration times the central volume of distribution  
times the body weight.

20

21

A. I believe so. The volume of  
distribution in terms of litres per kilogram.

22

23

Q. In terms of litres per kilogram?

24

A. Right.

25

Q. And in this particular case





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we didn't really have to assume because we can read  
from the chart that the body weight was 5.37 kilograms.

3

4

A. Right.

5

6

Q. And what we were interested in  
was what dose had to be administered in order to get  
a concentration of .070, is that correct?

7

8

A. It depends what unit you were  
using.

9

10

Q. What unit should that be, it  
was 70 nanograms per ml.

11

12

13

A. I think it was reported as  
70 nanograms per ml., that would be 70 micrograms  
per litre, you might put it into litres so that  
everything is the same.

14

15

Q. So that is micrograms?

16

17

A. Per litre, and then take the  
decimal point off it is 70, it is not .07, it is  
70.

18

19

Q. The volume of centre of  
distribution should then be in litres per kilogram?

20

A. Yes.

21

22

23

24

25

Q. Now, when you plugged these  
numbers into the equation you assumed then that the  
centre volume of distribution was 1.3, and I believe  
that when you did that calculation putting it in, if





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Kauffman  
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the volume of central distribution is 1.3, then the  
dose turned out to be 0.5 mg.?

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A. As I recall that is correct.

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Q. And that was equal to 10  
pediatric vials.

A. Let's see, there is .05 milli-  
grams per millilitre.

Q. And one pediatric --

A. And one vial.

Q. So that would be 10?

A. That would be 10, right.

Q. Or one adult vial?

A. It would be less than one adult  
vial, wouldn't it? Aren't there 2 millilitres in one  
adult vial when the concentration is .25, so it would  
be one adult vial, you are correct.

Q. Now, when you initially gave  
your evidence on the first day you said that for the  
central volume of distribution --

MR. HUNT: What is reference, please?

MS. SYMES: At page 5521, Mr. Hunt.

Q. That you could have equally  
used .5, .6.

A. I am sorry, what page?

Q. 5521.

A. Okay.

Q. You said you could have equally  
used .5, .6, .81, et cetera.







I.2

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A. Yes.

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Q. And in fact the range then that you have posited is somewhere - that you have posited for volume of central distribution is somewhere between .5 and .13.

7

8

9

A. Yes. I think actually the studies that I used to give me some basis for selecting the number were .6 something to 1.3.

10

11

12

Q. Let's take then this mathematical exercise that you did and try and caculate the dose over the range of volume of central distribution to see what we get.

13

14

15

16

17

A. Okay.

Q. And if we take the volume of central distribution, let's take the minimum to be 0.6, and if we plug those into the equation and if I can - if my calculator is able to --

18

19

20

A. I can save you some time. You can just divide it by half.

21

22

23

24

25

Q. All right. So I believe that the dose is equal to --

A. .2 something.

Q. I got .23 when I did it.

A. Well, it should be --

Q. It should be higher?





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A. It should be - well, .6 is about half of .3 so this would be how you would come out, that is correct.

Q. Now if we try and put that since .23 of a milligram doesn't help me very much in understanding how much to give, that would be 6 pediatric vials. No, I'm sorry, that would be 4.6 pediatric vials.

A. Yes.

Q. Or it would be 0.46 of an adult vial? Would you agree?

A. I think that is correct, yes.

Q. Let's try the next one. If we take the volume of central distribution to be 0.8, moving up to the range.

A. Right.

Q. And if again my calculator is correct I believe that this dose turns out to be 0.3. I think I have done it correctly. I simply put in the numbers --

A. I will accept that your arithmetic is correct.

Q. That my batteries still work?

A. Yes.

Q. And that we then have - that is





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equal to 6 pediatric vials or 0.6 adult vials.

4

A. Okay.

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Q. Let's do the last one just so that we have a range. If the volume of central distribution is 1, 1 litre per kilogram, then I believe the dose turns out to be .38. And if the dose is .38 then I believe that the pediatric vials needed are 7.6.

9

A. I think it is superfluous to use so many decimal points, but that is okay.

10

11

Q. Well, I am more interested in the adult ones.

12

A. Yes.

13

Q. 0.6 of an adult vial.

14

A. Okay. Almost an adult vial.

15

Q. Well, three-quarters of an adult vial.

16

A. Three-quarters.

17

THE COMMISSIONER: 0.76. All right.

18

19

MS. SYMES: Q. You would agree with me then, that if we change the assumption of the volume of central distribution --

20

21

MR. HUNT: Sorry, that is 0.76.

22

THE COMMISSIONER: Yes.

23

MR. HUNT: You said 0.6.

24

MS. SYMES: 0.76. I'm sorry.

25





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I.5

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THE WITNESS: It is 0.76 of an adult vial.

4

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MS. SYMES: Q. 0.76 which is three-quarters of an adult vial.

6

A. Right.

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Q. And you would agree with me then, Dr. Kauffman, that the numbers that I have given - let's just take the adult vial, that in order to produce a concentration of 70 nanograms per ml in this baby that weighs 5.37 kilograms the range is from .46 of an adult vial to one adult vial.

12

13

A. From somewhere a half to one

vial.

14

Q. Yes, okay.

15

16

17

18

A. And as I said I think the other day I was asked why I picked that particular number and I said I had two studies that gave me that number, and one study that gave me the .63 so I decided to go with the majority.

19

Q. Okay.

20

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A. But I have no quarrel with this exercise.

22

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Q. But we have literature reviews then that put it in the entire spectrum that I have written on the blackboard.







I.6

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A. That is correct.

Q. And Dr. Hastreiter I gather in a recent paper has calculated it as 0.62.

A. Yes. In fact I think that is his data that I was referring to for the .6.

Q. For the bottom one?

A. Yes.

Q. And if we look at Exhibit No. 268 which is an Hastreiter article - I believe that has been put before you - on page 26 of that --

A. Can you tell me which article?

Q. It is the article called "Digoxin Pharmacokinetics in Premature Infants".

A. Right.

Q. In Pediatric Pharmacology, 1982.

A. Right.

Q. Would you turn to page 26 of that, and in that paper at the bottom, Dr. Hastreiter is referring to the volume of central compartment. Is that the same thing the volume of central compartment or the volume of central distribution?

A. I think that he - I can't speak for him. I would read his paper as meaning that, yes.

Q. And he got in this one 0.62





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litres per kilogram a mean value.

A. For premature infants.

Q. And I gather that in reading this that he says that the central volume of distribution is smaller in smaller children?

A. Well, he says it is smaller in premature infants.

Q. Doesn't he also say --

A. At least on this page you have referred me to he says:

"The mean value (and this is a mean value) of 0.62 calculated for premature infants in the present study is lower than that of all other age groups."

Q. And didn't he also say it is significantly lower than the values reported for full term neonates and older infants?

A. Where does he say that?

Q. Continue on the sentence, sir.

A. Well, that is the sentence.

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Kauffman, cr.ex.  
(Symes)

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EMT/cr

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Q. "The volume of the central compartment for the premature patients is significantly lower than the values reported for full term neonates and older infants".

A. Where are you reading?

Q. Just continuing the sentence.

A. I am sorry, we must be on a different page.

THE COMMISSIONER: I think on 28 we find it.

MS. SYMES: Q. The sentence continues on page 28.

A. Well, I am on page 26.

Q. Yes, the sentence begins on page 26 and ends on page 28.

A. "The volume of the central compartment for the premature infants is significantly lower than the values reported for full term neonates and older infants".

That is what you are referring to?

Q. Yes.

A. Okay. I am with you now.

Q. And is it logical that the





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central volume of distribution would increase as  
children grow?

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4

A. You might extrapolate that  
from this.

5

6

Q. From that ambiguous sentence?

6

7

A. From this information, but I  
don't think we know that for sure. All he is saying  
is that a very small group of prematures he observed,  
the way he did the study, he observed a different  
calculated central compartment distribution, and he  
is saying that it seems to be smaller than in the  
older age groups.

10

11

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Now whether you could conclude from  
that with statistical validity that there is a change,  
a rate of change as the baby matures I don't know.  
You might. It might be a reasonable deduction. I  
don't think you can do it with a great deal of  
certainty yet with this amount of material. We do  
know there is a difference.

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Q. We do know. And we would  
then in this exercise that I have just gone through  
have a possibility of delivering 70 nanograms per  
mil of digoxin in Justin Cook by .46 of an adult  
ampule and .6 or three-quarters of an adult ampule  
or a full one?

20

21

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A. Well ---

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Q. That is leaving all of the  
rest of your assumptions that you made the same.

4

5

A. I would agree with you in  
general. My discomfort is that the .6 volume  
distribution is for premature infants in infancy or  
in the newborn period apparently according to Dr.  
Hastreiter's data, and I don't remember whether Justin  
Cook was a premature infant.

6

7

8

9

10

Q. I don't know that Justin Cook  
was a premature infant and quite frankly he was  
almost three months of age.

11

12

13

A. And if the data ---

14

Q. Three months and 29 ---

15

A. So it may not be appropriate  
to use the central volume distribution central  
compartment for the premature group to apply to  
assumptions on Justin Cook.

16

17

18

I didn't have this paper when I did  
my calculations a year ago because it just came out  
now, but I am thinking now it may not be appropriate  
to use that lower number because the patients from  
which it is derived may not be comparable to this  
specific case.

19

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22

23

Q. Well just as we might take

24

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2-3





Kauffman, cr.ex.  
(Symes)

1  
2 off the bottom number on this range we might  
3 similarly take off the top?

4 A. Yes. I would agree with you.

5 Q. Now when ---

6 A. I think we can fairly say  
7 probably somewhere between .8 and 1.3, and if you  
8 want to agree on 1 that is an easy round number.

9 Q. Or we could agree as between  
10 .6 and three-quarters of an adult vial.

11 A. I think - you are right, yes.

12 Q. So on page 5512 of Volume 70  
13 you were asked by Miss Cronk as to whether or not the  
14 volume of Inderal which was .6 of a millilitre that  
15 was administered at 3:45 and 3:55, that is a total  
16 of .6 in total, if that that had been digoxin instead  
17 of propanolol or Inderal could that have produced the  
18 concentration of 70 nanograms per mil.

19 I guess it is fair to say that the  
20 exercise we have just gone through was that that  
21 number is within the realm of possibilities?

22 A. Well, is it?

23 Q. Sir, .6 of an adult vial is  
24 if a volume of central distribution is .8.

25 A. Yes. I think that these  
assumptions that you arrived, I would agree with you.





Kauffman, cr.ex.  
(Symes)

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I went on to say I didn't think these assumptions would fit the situation but if you go with these assumptions, I would agree with you.

Q. Just so that I understand it clearly, the .6 if it had been propanolol or Inderal, just on this one mathematical model, could have produced a concentration of 70 nanograms per mil?

A. Yes.

Q. Using all the same assumptions that you did?

A. If I accept the volume distribution of .8.

Q. And now I am going to move on to the next thing which is the time, and would this be an appropriate time?

THE COMMISSIONER: I have lost track, what are we talking about at 5512? Are we now talking about a minimum dose?

THE WITNESS: Yes.

THE COMMISSIONER: Or are we talking about ---

THE WITNESS: No, this was the minimum. This was my minimum dose calculation.

MS. SYMES: Mr. Commissioner, what has





1

2

happened is that the minimum ---

3

THE COMMISSIONER: I understand. I

4

understand.

5

MS. SYMES: - that the minimum has

6

gone down.

7

THE COMMISSIONER: Well, the minimum

8

could have been - what you are trying to establish

9

is that the minimum dose accepting all of those

10

assumptions, resulted in a minimum dose. It could  
have been propranolol; that could have been a mistake.

11

Is that right?

12

MS. SYMES: Yes, and theoretically it

13

could have gone down as low as .46 of an adult vial,

14

but if we take off the bottom - we take off the top

15

from the range then somewhere between .6 or .8 -

16

.6 or .76 of an adult dose ---

17

THE COMMISSIONER: Dr. Kauffman

18

said at 5512 I think it is somewhat unlikely.

19

MS. SYMES: Sir, I think in his

20

mathematical calculation it was totally unlikely

21

because it was completely out of the range.

22

Q. Isn't that so, sir?

23

A. No, I don't think that was

24

the intent of my comment at that point. I thought

25

it was unlikely for other reasons.







1

2

Q. Well, specifically you were

3

being asked at that point to calculate minimum dose?

4

A. That is right.

5

Q. And the minimum dose that

6

you gave in evidence was larger than that .6 of a  
vial?

7

A. That is right.

8

Q. So I mean it was more than

9

unlikely; it just didn't fit your mathematical model

10

at all?

11

A. But that was not my reason

12

for saying it was unlikely.

13

THE COMMISSIONER: Mainly because of  
the tissue concentration.

14

THE WITNESS: Right.

15

THE COMMISSIONER: Then we will deal

16

with that after the break. We will take 20 minutes

17

now.

18

---Short recess.

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J/BM/ak

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---Upon resuming.

THE COMMISSIONER: Yes, Miss Symes.

MS. SYMES: I'm wondering if I could have the exhibit which is the vials, Exhibit 225.

THE COMMISSIONER: Yes.

MS. SYMES: Q. Dr. Kauffman, we have had these vials of different medications put in as exhibits before us and this little brown bottle I gather is the Inderal that would have been available on 4A/4B during the epidemic period.

I gather then when Inderal is being dispensed that the standard practice would be to draw up the entire content of the vial and then to inject whatever you need from that; if you need .1 or .8, is that the standard thing?

A. I don't know.

Q. Well, what would you do?

A. Usually if I am going to discard the vial I would draw up the amount I was going to give and then discard the rest of the vial.

Q. If you didn't know how much you were going to give, that is, it was for a potential emergency situation, you didn't know if you needed .2 or .8.

A. And I knew the patient I was





J2

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going to give it to?

3

Q. Yes.

4

A. I would probably draw up the  
dose appropriate for that patient.

5

6

Q. Would you, by the way, ever  
draw up from the ampule into a syringe and leave it  
at the end of a bed for some 10 hours?

7

8

A. I don't know if I would do that  
or not. I usually am not in a position of having to  
make that decision.

10

11

Q. Now, we know that the digoxin  
is called lanoxin in our example here, that is its  
trade name, is that right?

12

13

14

A. That is Burroughs-Wellcome's  
trade name I think.

15

16

Q. Just going back to the Interal.  
If the doctor were to have drawn up, or someone to  
have drawn up for the doctor the entire vial and then  
he wished to give .5 of it, I gather he would then  
mentally give half of the dose.

17

18

19

20

A. You mean if somebody had drawn  
up the entire 1 millilitre?

21

22

Q. Yes.

23

A. And they wanted to give half of  
it?

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J3

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Q. Yes.

A. Half of it would be .5 millilitres.

Q. But the other way is .5 is half of the vial.

A. .5 is half of this vial.

Q. And it would also be half of what was in the syringe?

A. If they left 1 cc in the syringe and then injected half of that with 1 cc in the syringe, there should be .5 cc's left in the syringe after the injection. Is that what you are getting at?

Q. I'm just trying to go through a very simple exercise and, that is, if the person administering the drug thinks that he wants to give .5 of a milligram of Inderal or .5 I guess of an ml of Inderal.

A. Yes. You have to keep volumes and milligrams separate.

Q. All right. I would then know I should give half of what's in the syringe.

A. If he had a millilitre in the syringe and he wanted to give .5 he should give half of what is in the syringe.

Q. Okay. Now, if we look at







J4

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lanoxin, which is what digoxin is, this is what I  
gather from evidence the adult size?

4

A. Yes.

5

Q. Okay. And if all that were

6

drawn up into a syringe.

7

A. Yes.

8

Q. And one half of it were given,

9

that is, one half of what was in the syringe was given.

10

A. Yes.

11

Q. In that particular case it would

be one half of 2 mls, which is 1 ml.

12

A. This is a 2 millilitre vial.

13

Q. It says so, doesn't it?

14

A. Yes.

15

Q. Yes.

16

A. And so if you had all of that

17

2 millilitres in the syringe and you gave half of it  
you would give 1 millilitre.

18

Q. So, if the doctor thought - I

19

am positing an error to you - that in fact what was

20

in the syringe was 1 ml of Inderal but in fact was

21

2 mls of digoxin and gave one half of this syringe,

22

that would in fact produce 1 ml of digoxin?

23

A. No, no. 1 ml, yes.

24

Q. Yes.

25





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J5

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A. If the individual didn't look  
at the syringe.

4

Q. Yes.

5

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A. And didn't look to see how  
much they had to begin with and they had 2 millilitres  
in the syringe and they gave half of it they would  
give 1 millilitre.

9

10

11

Q. That's right. So, in other  
words, if one does a calculation - I mean, these  
bottles I guess look different but if you were in a  
real rush.

12

13

A. They look quite different to  
me.

14

Q. Well, one of them is brown.

15

16

A. And they are different sizes  
too.

17

Q. Different sizes.

18

A. And the lettering and the  
label is different.

19

20

21

22

Q. But if this vial was not  
available to the doctor when giving, he would  
obviously not know what was in the drug, what was  
in the syringe, what drug was in the syringe.

23

24

A. That's correct. I assume that  
this is a clear solution, I can't tell through the

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J6

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coloured glass.

Q. It is our information that it is clear.

A. Is that correct?

Q. Yes, they are both clear solutions.

A. So, if you had a clear solution in the syringe and the syringe was unlabelled you would have no idea whether it was water or anything else.

Q. And if the doctor didn't have the vial to refer to when he was actually injecting the medication he wouldn't have a check.

A. Yes. I would hope he would want to make sure that he knew what was in it though before he injected it.

Q. Right. Now, in terms of the timing of the dose of digoxin, we know that the sample was drawn at 4:30 in the morning and that death was at 4:56. The sample produced 72 nanograms per ml and the fresh tissue from the heart muscle was eleven seventy-seven nanograms per gram.

On pages 5534 and 5535 you said that it could have been administered, your best estimate was that it could have been administered 1, 2 to 3





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hours before death.

A. I remember we had some discussion as to what I meant by that, so, I want to see ---

MS. CRONK: Could I have the page, please..

MS. SYMES: 5534, 5535.

MS. CRONK: Thank you.

MS. SYMES: Q. That it was administered some time between 1 to 2, 1 to 3 hours prior to death.

MS. CRONK: I'm sorry, Dr. Kauffman.

THE WITNESS: Go ahead.

MS. CRONK: You will recall, sir, that there have been two discussions about timing. Miss Symes at the moment is referring to the exchange in chief between Dr. Kauffman and myself and during that exchange his evidence was that it was 1 to 3 hours prior to the time at which the ante mortem sample was taken which/ <sup>was 4:30</sup> and it was not the time the child was pronounced dead. Subsequently there was a different exchange between Mr. Strathy and Dr. Kauffman yesterday morning which had to do with three different time frames. So, I think to be fair to Miss Symes.

MS. SYMES: I am exactly -- that is







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my whole point of going through here is starting at this thing and trying to narrow you down as to when you would place the time of the administration.

As Mr. Brown referred to the window of administration in another case ---

MR. HUNT: Could I ask you a question?

MS. SYMES: Yes.

MR. HUNT: Are we finished with the calculations on the board, because I think the Doctor had something he wanted to say after recess about the calculations that you went through before the recess and if we are leaving that area this is a good time to do it.

MS. SYMES: Well, you will have your chance to do reply.

THE COMMISSIONER: No, but the calculations disappear off the board, it will be off the board.

MS. SYMES: Oh, I see.

THE WITNESS: My problem is I think I may have inadvertently agreed, not seeing an inherent error and I want to make sure that we aren't doing something, either I originally made an error or we made an error when we went through this just now. I'm not certain I know where it is but I would like to





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go through it again and see if there is an error.

4

MS. SYMES: Q. A calculation error?

5

A. Yes.

6

Q. Do you want to mark down my numbers?

7

A. Well, I think I understand.

8

With your permission, I would like to finish it now and see whether or not I agreed to an inherent error in our assumptions here, or I can write this down and we can come back to it later.

10

11

THE COMMISSIONER: Whatever it is you want to do.

12

13

THE WITNESS: It would be easier for me to do it now.

14

15

THE COMMISSIONER: All right.

16

17

THE WITNESS: Assuming the .6 millilitres being administered and assuming it was adult digoxin, that would give an amount of .15 milligrams, I believe, isn't that correct?

18

19

MS. SYMES: Q. Yes. I have just done that last with you.

20

21

A. Yes.

22

Q. Dr. Kauffman, with respect to the vials.

23

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A. So, that is, may I write on

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J10

your sheet here?

Q. Of course.

A. That would give us a total dose under those assumptions of 150 micrograms, is that correct?

Q. Well, now wait a second, .6?

A. Yes, .6 millilitres.

Q. Yes.

A. Of adult digoxin.

Q. Yes.

A. Which is .25 milligrams per millilitre.

Q. Yes.

A. Right, equals .15 milligrams of digoxin.

Q. Right.

A. Is that correct? I think it is. Now, that equals - I am just changing the units now to make it easier to go ahead - that equals 150 micrograms of digoxin. I want to go through it slowly and label everything so I make sure we aren't making an error. That is a dose where postulating would have been administered in .6 millilitres over a 5 minute period.

Q. Yes. Sir, is that of digoxin?

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6373





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A. Of digoxin.

4

Q. Yes. .6 of millilitres, yes.

5

A. You see, .6 millilitres in the  
adult preparation contains .25 milligrams per milli-  
litre.

6

7

Q. Yes.

8

A. So, .6 millilitres would  
contain this amount of digoxin.

9

10

Q. Yes.

11

A. Right. This .15 milligrams  
equals 150 micrograms.

12

Q. Yes.

13

A. I have just changed the units,  
done nothing else to it.

14

15

Q. Yes.

16

A. This goes into some volume to  
produce the concentration.

17

Q. Yes.

18

A. Then we assume the .8 that  
we were talking about here. The baby weighed 5.37  
kilograms and the volume distribution was .8 litres  
per kilogram. So, we come out with an absolute  
volume that we are talking about to distribute this  
dose into a 4.3 litres.

19

20

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22

23

Q. Yes.

24

25







J12 1  
2  
3 A. And if you divide .6 - I mean,  
4 if you divide 4.3 litres into 150 micrograms you come  
5 out with 34 micrograms per litre rather than 70.

6 Q. Yes.

7 A. So, I thought we had an error  
8 but I didn't know where it was. So, giving this dose,  
9 what I am saying is, giving this dose of .6, even  
10 assuming this volume, the lower volume, would not be  
11 predicted to produce a concentration in the neighbour-  
12 hood that we were talking about. Now, have I made  
13 an error?

14 Q. The one thing is, sir, that  
15 this was the proportion of adult vial or pediatric  
16 vial. I completely understand and that is why I had  
17 you go through the exercise with the 1 ml and the 2 ml  
18 vials. This calculation that we had done was .6 of  
19 an adult vial. .6 of an adult vial is 1.2 mls.

20 A. That's right, it would be twice  
21 the volume.

22 Q. Exactly.

23 A. So, the individual would have  
24 to not only select the wrong drug but give the wrong  
25 volume.

Q. Or conversely someone else  
might have selected the wrong drug.





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A. I just said an individual,

3

whatever.

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Q. Let's make it two separate -

5

I quite agree with you.

6

A. I didn't realize at the time

7

you were postulating two sequential errors.

8

Q. Yes.

9

A. I was just looking at the

exchange in drugs.

10

Q. I want to make this very clear.

11

These are percentages or proportions of vials.

12

A. I understand that but I thought

13

you were going volume per volume, I didn't realize

14

you were multiplying times 2 of the volume.

15

Q. You have to because they are

16

in different vials.

17

A. Yes. You see, when I did my

18

calculations I assumed they made an error volume per

19

volume not that they made two errors.

20

Q. Yes, but if one person had made

21

the error and put the wrong drug, drawn up the wrong

22

drug into the syringe, that is, drawn up an adult vial

23

of digoxin for one vial of Inderal and then had

24

given, as I said in my example to you before, half

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of the adult vial, half of the amount in the syringe





J14

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thinking that they were giving half of a vial of Inderal, that definitely is a second mistake but it would produce in this particular example .6 of an adult vial would produce 1.2 millilitres of digoxin.

A. Given that scenario, yes.

Now I see where we were different, thank you.

Q. I mean, the example is correct, the calculations are correct and, you are right, you have to do the second step which I did with the vial.

A. Yes.

Q. Yes.

A. If you assume the volume error as well as the switch error then we come out the same place.

Q. And the error is that the doctor would look at the syringe and say I want to give, for example, half of it and the reason that he might say that is because I want to give .5 of an ml. If he gives half of an adult, that is, if that is what is in the syringe, it produces - well, let's use .6 - it produces 1.2 mls.

THE COMMISSIONER: Yes, Miss Cronk.

MS. CRONK: I'm sorry again to interrupt my friend. I didn't stand and interrupt when Miss Symes put the vials to Dr. Kauffman





1  
2 because I thought she was then putting a hypothetical.  
3 She suggested at that time, according to my notes, that  
4 there was a vial attached to the syringe of the drug  
5 that was attached to the end of the bed. We of course  
6 have heard in evidence that Dr. Kantak was recorded  
7 to have administered the drug, testified at the  
8 preliminary hearing that attached to the syringe was  
9 an empty vial of Inderal.

10 Now, in fairness to the Doctor, I  
11 simply suggest that obviously what I thought was a  
12 hypothetical was not a hypothetical and, if that's the  
13 case, then he should be told what Dr. Kantak's  
14 evidence was and being invited to express an opinion.

15 MS. SYMES: Well, Miss Cronk, you  
16 also note that there may be other evidence to  
17 question that.

18 MS. CRONK: Well, at the moment I  
19 don't, Miss Symes. I mean, if there was other evidence  
20 at the preliminary hearing I would like to know about  
21 it.

22 MS. SYMES: There is nothing I know  
23 of in the preliminary hearing and I am putting it to  
24 the Doctor in the hypothetical because I am sure that  
25 we are going to have to hear a lot more direct evidence  
with respect to the events surrounding Justin Cook







J16

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before we can come to any conclusions.

3

THE WITNESS: My answer is hypothetical.

4

MS. SYMES: Q. Your answer is

5

hypothetical.

6

Now, let's go back to the timing then

7

with respect to the drugs. I quite accept what

8

Miss Cronk has said and, that is, that there were

9

a number of calculations that you had done with

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respect to the time and all I would like to do is

11

try and sort out what your best estimate with respect  
to the time is.

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Q. What we know then, the baby got into trouble at 0345; we know that at 0420 we have an arrest; we know that at 0430 that we have a sample taken, and that is the sample that produced 72.

A. CPR was started at 4:20, roughly.

Q. Starting here at 4:20 according to the nurse's notes on page 29, and we have 456 code stopped. Theoretical or actual death I guess at 4:56?

A. Yes. I suspect death was occurring during that entire 1-1/2 hours.

Q. Now, one of the problems is how much circulation and profusion they were able to effectively produce with the CPR, that is a concern, isn't it, in any arrest?

A. You hope you produce enough to maintain the patient's oxygenation until you can establish a normal heart rate.

Q. And if CPR is continued would it then be distributing blood throughout the body?

A. To some degree.

Q. And if digoxin is in the blood digoxin would also be being distributed to the body?

A. It could be.

Q. Now, if we look at Exhibit 217-1,





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I think Mr. Elliot has put it in front of you, it is a distribution chart that was put in evidence by Dr. Spielberg.

THE COMMISSIONER: This is what number?

MS. SYMES: 217-1.

THE COMMISSIONER: An exhibit?

MS. SYMES: 217-1.

THE COMMISSIONER: Oh, yes, all right.

MS. SYMES: Q. Do you have it in front of you?

A. Yes, I have it, thank you.

Q. That was presented to us as a pictorial representation of the distribution and elimination phase of digoxin over time, plotted on a logarithmic basis.

A. From serum?

Q. From serum.

A. I assume this was hand drawn by Dr. Spielberg?

Q. Maybe he did it with a ruler.

A. I don't know, I was just asking did it represent real data, or was it from a publication, or did he just give this to you as an example of an illustration of what he was talking about?

Q. I think it was his illustration.





K.3

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A. Of what he was saying at the

3

time.

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Q. Of what he was saying at the

5

time. The question is, he has postulated that in the

6

alpha phase the half life for distribution is 30

7

minutes, and I think you have agreed that that is

8

reasonable.

9

A. I have agree that the alpha

half life in serum is 30 to 60 minutes.

10

Q. And that the volume of

11

distribution in this I think he has postulated as

12

from .6 to 1.

13

A. Which is essentially what I

talked about.

14

Q. And then he has talked about

15

the beta phase which is the elimination from serum,

16

and he has postulated that to be from 20 to 80 hours.

17

A. Yes.

18

Q. And I believe he told us it

19

would be about 5 half lives to distribute.

20

A. You would expect the serum to

have reached equilibrium with the rest of the body in

21

5 of these alpha half lives.

22

Q. Now that is using a half life

23

as 30 minutes, that would give 2-1/2 hours, isn't that

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correct?

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K.4

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A. Yes. Yes, is that right,  
5 times 3 is 150 minutes, is that 2-1/2 Hours?

Q. Yes.

A. Okay.

Q. If digoxin were given either  
in error or in any way administered around 3:30 to  
3:45; if digoxin were administered at the top number  
and a sample were taken at 4:30, that would have had  
then 45 minutes in which to distribute, to an hour?

A. There would have been,  
assuming that there was reasonable circulation --

Q. Yes.

A. There would have been about  
45 minutes for the digoxin to be equilibrating outside  
the serum.

Q. And that would be within 1 to  
1-1/2 half lives?

A. That is correct.

Q. And during that period of 1 to  
1-1/2 lives, I understand that whatever amount of  
digoxin that there was in the serum one-half of it is  
gone after 1 half life?

A. You have to remember that  
these are hybrid constants, so that the alpha half  
life represents one process that is removing digoxin





K.5

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2 from the serum. The beta, which we call elimination,  
3 is a second process that is removing it, and so these  
4 are going on simultaneously, they don't operate  
5 independently. So you can say it this way and be  
6 correct; that within one alpha half life half of the  
7 digoxin that is going to leave the serum due to  
8 distribution would be gone, but it won't be half of  
9 what was there because the beta process, or the  
10 elimination process is accounting for part of it,  
11 it is a hybrid function, do you understand what I am  
saying?

12 Q. Yes.

13 A. Okay.

14 Q. I understand the two things  
15 operate simultaneously. Of course the alpha with a  
16 30-minute period and the beta with a 20 to 80 hour  
period, the alpha is going to predominate, isn't it?

17 A. The rate of decline tends to  
18 be controlled by the - in elimination by the more  
19 rapid of the two processes, the constants during that  
20 period.

21 Q. Yes, because one of them is a  
22 much sharper curve?

23 A. That is not why, but the curve  
24 describes it.  
25





K.6

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Q The curve describes that the  
sloped end, that is the rate of change, is much faster?

A That is right.

Q In the alpha curve?

A That is right, the concentration  
of serum is much faster in the alpha phase than the  
beta phase, that is right.

Q So it wouldn't be far wrong  
in the first half life then to say that the alpha is  
going to predominate?

A I think it defines the  
dominant slope of the curve, yes.

Q Fine.

A Acutally what you actually  
see are not two sharp curves as you have drawn them,  
you see a curve linear, a curve linear graph.

Q It is exponential, isn't it?

A Well, he has drawn exponential  
but it isn't a sharp break like that, it is a curve  
linear's picture when the points reflect usually.

Q I only want to talk of course  
about the very steepest part of the alpha curve at  
this point, and that is during the first or 1-1/2  
half lives when I gather digoxin is coming out of the  
serum and into the tissues?





K.7

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A. Well, it is coming out of the serum and going some place.

Q. During that 1-1/2 half lives, I gather that the digoxin would commence binding to the heart?

A. Some of it would.

Q. You say that the digoxin comes out of the serum and goes into tissues; would the going into tissues depend upon which tissues?

A. Well, I think it is fair to say it goes into tissues. The rate at which it goes into various areas of the body apparently is quite variable.

Q. Okay.

A. You have to think in rates while we are talking about this.

Q. All of this I gather we can quantify, we can describe qualitatively what we think happens, is that right?

A. I think we can talk qualitatively, yes.

Q. So that when the blood is, half of the digoxin is leaving the serum, is it reasonable to say that the tissues that it goes into at first are most likely those that are profused most greatly with blood?







K.8

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A. During the early distributive phase the drug tends to get to the high blood flow organs first. There are many other factors that influence the rate, but blood flow during that period of time is an important factor.

Q. And the heart is one of the tissues, or one of the organs that has a large, relatively a large blood flow through it?

A. Yes, normally it does, yes.

Q. What are the other factors that depend upon which organ or which tissues digoxin would adhere to first?

A. It depends on the make-up of the tissues in terms of their protein, fat, water content. Whether or not there are specific binding sites, or the affinity of non-specific binding sites for the drug; and the drug solubility and various components of that tissue in the brain, the blood brain barrier seems to make it very difficult for digoxin to get into the main parts of the brain very rapidly.

Q. So blood doesn't go through to the brain; we have one thing was the profusion over the tissue or the organ. The other thing was the number of receptors, are they specific or non-specific in tissue?





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A. Well, I hate to talk about  
receptors.

Q. Would you call them binding  
sites?

A. The affinity of various binding  
sites for the drug.

Q. And does the heart have a  
high affinity for binding?

A. It has, it seems to be at  
equilibrium, it is one of the organs where higher  
concentrations are seen, yes.

Q. Do we know that the digoxin  
when it leaves the serum and goes into the tissues,  
that as time continues the digoxin may leave the  
initial tissue that it is attached to and move to  
another tissue?

A. Yes. I think that there is,  
during this period of time there is probably  
re-equilibration occurring as total body equilibrium  
ensues. Because initially you would anticipate seeing  
higher concentrations of the high blood flow organs,  
and then as you approach equilibration you could have  
some digoxin coming out of those tissues and being  
carried off to another spot as everything equals out  
to what it is eventually going to be a few hours later.





K.10

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Q In the initial period, in the  
initial first alpha half life, and say the second  
alpha half life --

A I beg your pardon?

Q In the first alpha half life.

A Yes.

Q The first 30 minutes --

A Okay.

Q -- or the next 30 minutes.

A Okay.

Q In that period of time can we  
agree then that the digoxin that is leaving the serum  
proportionately will be found higher in tissue in the  
heart. If we were to sort of click a picture --

A Higher than what?

Q Than it would be if it were  
taken say 2-1/2 hours later?

A No, not necessarily.

Q Why?

A Because some of the data I  
have seen suggests that for some reason the rate of  
distribution is momentarily higher, for example in the  
kidney, than the heart, compared to steady state  
concentrations. So you have to compare the ratio of  
what the heart concentration would be at the moment





K.11

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in time you are postulating compared to what it would be at equilibrium; and then what the concentration in the reference organ would be at the same time during distribution related to what it would be at equilibrium, and this gives you some idea, it is not a good measurement, but it gives you some clue as to what the relative weights of distribution may be.

In other words, what I am saying you can't conclude from what you have just said that although the heart may eventually bind a lot of digoxin that its rate of uptake will necessarily be higher relative to some other high blood flow organs. Do you understand what I mean?

Q. I understand what you are saying, but I didn't mean to ask that question.

A. That is why I asked you relative to what?

Q. I didn't mean to ask that question as to whether or not the relative uptake of heart compared to kidney was higher. I am asking a simpler question than that.

A. Okay.

Q. And the simple question is, if we clicked the camera after 30 minutes, that is the first alpha phase, and took a piece of tissue from







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the heart and measured the digoxin level, then waited until the alpha phase, the distribution phase was more or less complete, 2-1/2 hours later and clicked the camera again and took a bit of tissue from the heart; would the level of digoxin in the heart be higher in the first than in the second?

A. I would predict it would be higher in the second.

Q. That it would be higher in the second?

A. Yes, if I understand your question.

THE COMMISSIONER: What she is asking I think is there a greater adherence to tissue in the first or in the second, that's all?

THE WITNESS: That question doesn't make sense.

THE COMMISSIONER: It is obviously more in the second, but does it proportionally come more in the first than in the second, that's all? The first half life --

THE WITNESS: The first half life you get half of what is eventually going - the net is half of what it is eventually going to be, and in the second half life you get a quarter of what it





K.13

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is going to be; is that your question?

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Q. Well yes, and further on is

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that during the second, third and fourth alpha half

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lives some digoxin may leave the heart and move to

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other tissues, or other organs?

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A. I don't know that is the case.

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If you can show me data that that is the case I will

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accept it, but I don't know that's the case.

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But I don't know that that is the case.

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Q. Do you know that after --

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A. What I was speaking about as

reshuffling is that usually high blood flow organs with slow binding affinities will initially have very high concentrations because of the blood flow and solubility, but then the higher affinity organs will eventually take up more and the concentration in those high blood flow low affinity organs will decrease as later on in this distributive period.

I don't think a heart is a low affinity organ. I think it is a high affinity organ. so what I am saying - I used kidney as an example because it happens to be a high blood flow organ that has a lot of digoxin in it initially after an acute dose, and then it drops with equilibrium.

The heart seems to go the other direction. It takes it up because it has a high affinity but the rate of uptake may be a little slower than the kidney.

Q. I understand what you are saying but the digoxin that moves, for example, to the brain has got to come from somewhere.

A. True.

Q. So it is going to come partially





L2 1  
2 from the heart?

3 A. I don't know how much of it.  
4 I doubt if very much of it does. I suspect that it  
5 comes from tissues where there is less affinity for  
6 it.

7 But we have to remember that when a  
8 molecule of digoxin goes to one spot, it doesn't  
9 stay there. I am afraid people are starting to think  
10 that we are dealing with a non-dynamic situation,  
11 that digoxin goes into the blood, it gets carried  
12 to a spot and stays there forever.

13 Well, that isn't what happens. You  
14 have a dynamic situation all the time because all  
15 this binding is reversible.

16 Q. We understand that.

17 A. And it is related to  
18 concentration and relative affinities.

19 Q. We understand that it is  
20 constantly binding and unbinding during life.

21 A. Right.

22 Q. With respect to the distribution  
23 of digoxin from serum to tissue do you agree that we  
24 know very little about it?

25 A. Well, I agree --

Q. -- at this particular time?







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A. I agree with that.

4

Q. In terms of rates or --

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A. We especially know very little about the dynamics, the quantitative dynamics of its movement into tissue.

6

7

Q. And I had given you last night a case study, a case report by Dr. Hastreiter.

8

9

A. Yes, and I brought it with me this morning. I thought you might mention it.

10

11

Q. And with respect - well, I hope to do that. This is a report entitled "Accidental Digoxin Overdose in an Infant Post Mortem Tissue Concentration" and it is found in the Journal of Forensic Sciences, and I must confess that Mr. Brown gave it to me. I didn't find it myself. I think they passed it out.

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MS. CRONK: Why do you confess that?

MS. SYMES: Because I am honest in  
attributing good research to where it belongs.

Q. In this report - could this  
report and I think everyone now has a copy of it,  
Mr. Commissioner. Could it be marked as the next  
exhibit?

THE COMMISSIONER: Case report - what  
number are we at? 276.

---EXHIBIT NO. 276: Report entitled "Accidental  
Digoxin Overdose in Infant  
Post Mortem Tissue Concentration".

Q. I understand that this then  
is really about one particular child, a seven week  
old child who was on digoxin therapy and was given  
by mistake an enormous dose of digoxin? That is  
2 milligrams of digoxin IV.

THE COMMISSIONER: Before you get too  
deeply into this, you realize we are having the  
author of this report next week?

MS. SYMES: It is specifically with  
respect to the distribution into tissue, Mr.  
Commissioner.

THE COMMISSIONER: Yes. All right.

I wonder if you could let me have and  
perhaps we could ask Dr. Kauffman not to listen, but





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what your ultimate question is because I don't know where this is all leading, the ultimate question ---

MS. SYMES: The question is in 45 minutes how much digoxin might we expect to see in heart tissue?

THE COMMISSIONER: Yes. All right.

MS. SYMES: Q. That was essentially what the purpose of this particular paper was, wasn't it? It is just one child that they are trying to follow and I guess by a very unfortunate accident they actually got to observe a child where they knew many of the unknowns or assumptions that we have made?

A. This was a baby apparently that was known what the dose was and pretty closely to when it was administered so they had a lot of information that we don't have on any of these cases.

Q. So this one then we have a few less assumptions we have to make about it?

A. Yes.

Q. A seven week old baby then is obviously a young baby and I believe that the child weighed - whatever a child weighs.

Do you remember what the child weighed?





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A. I don't know that it is in  
the paper.

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MS. CRONK: 4.10.

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THE WITNESS: Oh, here it is.

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4.1 kilos.

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MS. SYMES: Q. And I gather that the  
child then was given 2 milligrams of digoxin IV  
and died 45 minutes later?

9

A. That is correct.

10

Q. That is the basics that we need  
to know about this.

11

12

It is not clear I gather from this  
particular reading whether or not the child arrested  
and then died; whether or not CPR was performed  
between arrest and death. None of that is  
particularly given?

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15

16

A. No, it isn't.

17

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Q. So we can't tell, for example,  
comparing it to Justin Cook whether there was good  
circulation for 45 minutes or slightly impaired?

20

A. No.

21

Q. Or slightly impaired  
circulation for 45 minutes.

22

23

A. The other and confusing  
thing - this infant is a close twin it looks like to

24

25







1  
2 Justin Cook in terms of what happened, but in terms  
3 of age and levels in tissue and so forth. There is  
2-4 4 one other thing that is different, though, but this  
5 baby had apparently already been digitalized.

6 Q. Exactly.

7 A. And that makes ---

8 Q. That makes quite a difference?

9 A. That creates an unknown.

10 Q. The digoxin had been prescribed  
11 and the child had been in hospital for three weeks  
12 following admission so we can leave out the other  
13 variable that you used on another child, and that is  
14 we can presume that digoxin was given for that three  
15 weeks?

16 A. We hope that administration  
17 is better at the hospital than at home.

18 Q. We hope. Okay. Table 1.  
19 My understanding of Table 1 indicates the presence  
20 of digoxin in various tissues.

21 Obviously it is post mortem and  
22 obviously it is 45 minutes after the administration  
23 of 2 milligrams of digoxin. Is that right?

24 A. The death was 45 minutes after.  
25 I am not sure when the autopsy was actually done.  
I don't recall if they say.





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Q. I don't know. I can't

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remember that.

4

A. But assuming that there was

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no significant change or redistribution prior to

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autopsy I would think these are fresh levels; I

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think we can accept them as being as good as anything

8

we have got on the other patients.

9

Q. On Table 1 then the controls

10

indicate under Tab 1 expected values or normal

11

values for digoxin in neonates and underneath is

12

in older infants and children, and the plus or minus

13

is the standard deviation. Is that right?

14

A. Is it? I don't know. When

15

I read this last evening I wondered about that. He

16

doesn't say if that is the range - I assume it is

17

standard deviation because this is the usual

18

notation, but it doesn't say.

19

Q. We will have to ---

20

THE COMMISSIONER: Who are these

21

controls? It is in the paper but tell me who are

22

they?

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MS. SYMES: Q. Who do you understand

24

he has compared the controls to?

25

A. From the paper my understanding

is that these were infants who had been receiving





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therapeutic doses of digoxin and had died for whatever reason and in whom they had obtained fresh tissue levels at post mortem.

Q. Dr. Kauffman, they relatively fit into the ranges which you have given us on previous days for normal levels of digoxin in tissue; is that correct?

A. They fell in that range.

Q. Yes. The top then of Table 1 is the particular distribution of this child's digoxin that would be within one and a half lives if we assume a 30 minute half life; is that correct?

A. These represent concentrations in the tissue of, following about one and a half serum 30 minute half lives, alpha half lives.

Q. And there appears to have been - there of course was a very large dose of digoxin; that is 2 milligrams, but there appears to have been a substantial amount of digoxin made its way to the atrium ventricle of the heart?

A. Yes.

Q. Do you agree?

A. Yes.

Q. So that ---





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A. One problem - the problem I raised a minute ago, I don't know how much of this was due to therapy. We can assume it was somewhere in the neighbourhood of these control concentrations.

Q. This would be a neonate, wouldn't this child seven weeks?

A. Yes, I would agree.

Q. So for example if the child were on therapeutic digoxin we would expect in the right atrium to have tissue concentration of 95 plus or minus 59?

A. Right.

Q. Is that correct?

A. Yes.

Q. But instead they got 667?

A. Right.

Q. And I could read the rest of those exactly as is?

A. Yes.

Q. I am reading them correctly, am I?

A. You read that one correctly, yes. You haven't read the rest of them.

Q. No, no.

A. I am not sure we need to.







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2-8

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Q. But if I read the rest of them  
the same way.

3

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A. What I did was I compared  
the same heart chamber level to the mean and standard  
deviation of the full term neonates below it.

5

6

7

Q. And it appears that the  
chambers vary depending on how they take up digoxin  
in 45 minutes?

8

9

A. It appears that way, yes.  
Not only the chambers but the other tissues also.

10

11

Q. Exactly. The only reason I  
am concentrating on the heart is because that is what  
we have in Cook.

12

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14

A. Right.

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Q. And the only thing that I want  
to use from this - it is difficult I guess to under-  
stand - I guess you write a paper about one  
particular child and I guess another child might  
be entirely different, but at least we have seen in  
one particular child in 45 minutes a substantial  
amount of digoxin actually got to the heart tissue?

21

A. That is correct.

22

Q. Okay.

23

24

A. Or it was found in the heart  
tissue and we assumed that a significant portion of

25





Kauffman, cr.ex.  
(Symes)

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that that was found got there from that dose.

2

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Q. There is nothing in the  
paper whatsoever that this child was toxic before  
he received ---

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5

A. No, no.

6

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Q. - before he received the  
digoxin?

8

THE COMMISSIONER: Well, there would  
have been some.

9

10

THE WITNESS: There would have been  
some there.

11

12

MS. SYMES: Q. Oh, of course. But,  
Dr. Kauffman, I have perceived it correctly, have I  
not that what we would expect there would have been  
approximately the 95.

13

14

15

THE COMMISSIONER: Only if it were  
a therapeutic dose.

16

17

MS. SYMES: No, sir. Perhaps I  
could try again.

18

19

If the child were on a therapeutic  
dose ---

20

21

THE COMMISSIONER: Yes.

22

MS. SYMES: And he were being  
maintained.

23

24

THE COMMISSIONER: Yes.

25





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MS. SYMES: We would expect that the  
level of digoxin in tissue would be 95.

3

4

THE COMMISSIONER: Oh, I see. Yes,  
95.

5

6

THE WITNESS: According to this right  
atrium.

7

8

MS. SYMES: The right atrium.

9

10

THE COMMISSIONER: So you subtract  
95 from 667 and you are going to prove something  
by that, are you?

11

12

13

14

15

16

THE WITNESS: Well, if you want to  
look at extremes like we have in the other cases  
you have to at least go 2 standard deviations above  
and below that. So the real value - there is a  
97 point something per cent probability that the  
real value was between ---

17

18

19

MS. SYMES: Q. 150. Down to 30 from  
150.

20

21

22

23

24

25

A. Well, it is more than 150.  
2 standard deviations ---

Q. 2 standard deviations.

A. So it is going to be almost  
300 down to 10 so the real value lies somewhere in  
there.

Q. Somewhere between ---





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A. I don't want you to mis-  
represent what the possibilities are.

3

4

Q. Oh, no, sir, we want to be  
absolutely precise. And similarly we could say that  
667 might not be right; that there might be a range  
on that as well ---

5

6

7

14  
2-11

A. Well, it was right ---

8

9

Q. If you took a slice of  
tissue next to it it might be slightly higher.

10

11

A. It was right in this  
particular baby. The reason we have a standard  
deviation in these others is we have several babies  
and the mean from those babies.

12

13

14

Q. Doctor, you will agree with  
me that if we took several slices of tissue we might  
get a variation amongst those tissues as well.

15

16

A. I agree with that.

17

18

Q. So that we know - all I want  
to extract from this particular paper is that in  
45 minutes in one particular baby digoxin went from  
the serum into heart tissue?

19

20

21

A. Some digoxin went from serum  
into heart tissue I am sure.

22

23

Q. And obviously some went into

24

25







1  
2 kidney, liver, fat, brain?

3 A. Yes, gut and everywhere else.

4 Q. Everywhere. Thymus and spleen  
5 and it carries on for another two pages.

6 A. That is right.

7 Q. Going back to Cook then we  
8 know if the digoxin administered at 3:45 - let's take  
9 exactly the same numbers as this sample - pardon me,  
10 as the Hastreiter paper, and we take a sample at  
11 4:30 we have the same time frame which is 45 minutes.

12 A. You mean we give 2 millilitres  
13 at 3:45?

14 Q. If an overdose of digoxin were  
15 given at 3:45 - obviously any digoxin given to this  
16 child is an overdose because he is not on digoxin.

17 A. Well, it may not be an over-  
18 dose but it would be a ---

19 Q. More than he should have had?

20 A. - a non-authorized dose.

21 Q. If any digoxin were given to  
22 this child at 3:45 in 1½ alpha half lives some of it  
23 would adhere to tissue, to heart tissue? Would you  
24 agree?

25 A. Some of it would go to the  
heart.





ANGUS, STONEHOUSE & CO. LTD.  
TORONTO, ONTARIO

Kauffman, cr.ex.  
(Symes)

6406

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2-13

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Q. Would you agree with me in  
the remaining I think it is 26 minutes from sample  
to, and I say arrest stopped, code stopped, in the  
remaining 26 minutes more could go.

- - - -





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A. Well, I think there is a

3

possibility that digoxin, some digoxin would go to  
the heart during that period of time shortly before  
and following arrest and up until the time circulation  
or the code was stopped and we assume there is no  
circulation, not even poor circulation.

7

Q. At 4:56?

8

A. Yes.

9

Q. Yes. So that we know then

10

just in the first timing that part of the digoxin  
would have left the serum and gone into tissue and  
if CPR was able to maintain some circulation digoxin  
would continue to leave the serum and go into tissue?

11

12

13

A. Say that again, I want to make  
sure I understand you.

14

15

Q. From 3:45 to 4:30, which is  
a 45 minute time?

16

17

A. Right, right.

18

Q. It is one and a half half

19

lives, alpha half lives. Digoxin would leave the  
serum and go to heart tissue?

20

A. It would leave the serum.

21

Q. And go, amongst other places,  
to the heart tissue.

22

23

A. It starts distributing all over.

24

25

M  
BB/cr





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Q. Yes. But the Hastreiter article would indicate that some of it would find its way to the heart?

A. Some of it goes to the heart, that's right.

Q. In addition, from 4:30 to 4:56 if CPR maintains some form of circulation further digoxin would distribute?

A. Yes.

Q. So, in other words, the sample that was taken of heart tissue after death we would expect that it would contain some digoxin?

A. If that happened you would expect to see some digoxin in the heart, that's right.

Q. And what we would expect that over that period, which is one hour and 11 minutes, we would expect that the level of digoxin in serum would be coming down, is that correct?

A. Yes.

Q. And that the level of tissue, heart tissue would be rising?

A. It would be rising or shifting in all tissues and I would expect it to be rising at some rate in heart tissue.

Q. Now, can we go back then and







1

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could you assist me with the numbers on the board,  
can you give me your best estimate as to when you  
think the digoxin was administered?

4

3

5

THE COMMISSIONER: He's already given  
that to you.

6

7

MS. SYMES: I want to try and do it  
in terms of - he said one, two and three hours.  
Could you just, so I could write it down, on the  
board.

9

10

A. I think there are a lot of  
vagaries here. I think it was administered some  
time, if it caused the initial symptoms at 3:45,  
it had to be administered some time prior to that.

11

12

13

14

Q. What is the outside range  
that you would place that?

15

16

A. The outside range I would  
think.

17

THE COMMISSIONER: You mean the farthest back?

18

THE WITNESS: I am sorry?

19

THE COMMISSIONER: You mean the  
farthest back, the earliest?

20

21

THE WITNESS: Oh, you mean the  
earliest it could have been?

22

MS. SYMES: Q. Yes.

23

A. Well, with the concentrations

24

25





1  
2 in serum that were found at 4:30 and the high tissue  
3 concentrations in the myocardium the time I gave,  
4 and I don't have any reason to depart from that,  
5 would be no longer than three hours prior to that  
6 simply because it is hard for me to conceive that the  
7 baby would not have developed symptoms if it was  
8 administered longer than that.

4  
9 Now, I know that there are cases of  
10 babies receiving large doses - well, I don't know  
11 what the dose was here.

12 THE COMMISSIONER: I am sorry, Miss  
13 Symes, that is 0045, not 1245.

14 MS. SYMES: Isn't it the same thing?

15 THE COMMISSIONER: No.

16 MS. SYMES: It isn't, is it?

17 THE COMMISSIONER: No, sorry about that.

18 MS. SYMES: You're right, 0045, 45  
19 minutes after midnight.

20 A. I acknowledge that there has  
21 been at least one case where the baby received a large  
22 dose of digoxin and according to the paper showed  
23 symptoms up to eight hours later but I think that is  
24 really highly unlikely. The other few cases have  
25 been much earlier than that. So, I think we have to  
stay somewhere in, in all likelihood, a three hour





5

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2

range prior to onset of symptoms that we could  
contribute to a toxic dose of digoxin.

3

4

Q. What is the shortest?

5

THE COMMISSIONER: Could you make it  
the earliest and the latest.

6

MS. SYMES: Yes.

7

THE COMMISSIONER: Because I understand  
that.

8

9

MS. SYMES: So, this is the earliest.  
The earliest and latest, sir?

10

11

THE COMMISSIONER: Yes.

12

MS. SYMES: And what would be the  
latest?

13

14

A. My best estimate as to  
latest, and this is difficult. It has to be some-  
where before 3:45 if we attribute those symptoms to  
it and I think it is possible, probably not so  
likely but it is possible with a large dose to see  
symptoms 15 to 20 minutes after a bolus, and there  
are a lot of variables here. I think it is probably  
longer than that but if you want outside numbers that  
could include all possibilities I would say the earliest  
may be 3:30.

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Q. Okay. And that is assuming,  
that is the important hypothetical, is assuming that

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Kauffman, cr.ex.  
(Symes)

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what was seen at 3:45 were symptoms of digoxin intoxication?

A. Yes, that was what I had just said.

Q. In that particular example, let's take the earliest, in this particular example would you agree with me that this would have had four hours in which to distribute. At 0045, if digoxin were administered at 0045?

A. A little over four hours.

Q. It would have been a little over four hours, which would have been the complete distribution in the alpha phase?

THE COMMISSIONER: No.

MS. SYMES: Well, practically it should have distributed in two and a half hours.

A. Distribution following a therapeutic dose at least usually is accomplished by 46 hours; equillibriation is accomplished in four to six hours.

Q. In this particular case then I understand that as we go on in time less and less is being distributed?

A. It tends to become insignificant after a while.







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Q. So that in that period most of it would have been distributed to the tissues?

A. It would have been distributed out of serum. I keep saying that because I don't want to convey a conceptual error here. People tend to equate, this has happened in Dr. Hastreiter's paper and I am not criticising him but many other papers too people intend to equate a disappearance from serum to appearance in tissues and they are not the same. That is like sitting at the airport and watching and counting the planes leave and concluding what time they are going to arrive at what destination and it just isn't the same.

Q. I guess like any small child there is limited places to go and time to get there?

A. There aren't limited places to go.

Q. Well, in the earliest example you have given then, most of the distribution from serum would have been completed?

A. That's right. You see, my point is that we can conclude that a half life of disappearance from serum is equal to a rate of appearance in any tissue.

Q. I understand what you are





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saying but just in terms of what would still be  
in serum.

3

4

A. Yes.

5

Q. Okay.

6

A. Not all that was there is

7

gone, it is equilibrated to what its equilibration  
concentration is going to be.

8

Q. Going back to the Hastreiter

9

article, Exhibit 276 on page 282 of that he

10

hypothesizes, doesn't he, that the half life of

11

distribution of digoxin into tissues is 30 minutes.

12

THE COMMISSIONER: I am sorry, what  
page did you say?

13

14

THE WITNESS: I am sorry, I am not  
with you.

15

THE COMMISSIONER: What page, Miss

16

Symes?

17

MS. SYMES: It is Exhibit 276.

18

THE COMMISSIONER: Yes, but what

19

page?

20

MS. SYMES: Just a second. On page  
483, I gave you the wrong page.

21

A. Yes.

22

Q. Under discussion.

23

A. Right.

24

25





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Q. The second full paragraph

3

reads:

4

"Following intravenous administration

5

the half time of digoxin distribution

6

in various tissues including myocardium

7

is 30 minutes."

8

A. But that is the point I was

9

just making. I think that is a naive interpretation

10

of the pharmacokinetics and I respect Dr. Hastrieter,

11

I am not criticizing him, but people misuse pharmaco-

12

kinetic concepts just like they misuse statistical

13

concepts and this is an example of it. He is

14

equating disappearance from serum rate constant with

appearance in tissue rate constant and they are

absolutely not equivalent.

15

Q. I am sorry, sir, when I

16

read this I presumed that this was the purpose of

17

the paper which was to calculate for the first time

18

distribution of digoxin into tissue.

19

A. He did not in any way calculate

20

distribution rates in tissue. He reported a case

21

in which he was able to quantitate the concentration

22

in tissue at a finite time after a finite dose of

23

digoxin but he has no data here with which to make

24

a distribution rate into tissue with. What he is

25





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doing is quoting a review article which says the  
average alpha half life 30 minutes and he is  
equating it with distribution into heart tissue  
and it is an error. I don't agree with him.

3

4

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Q. Well, you must agree that someone  
not trained in this, to read that, it clearly looks  
as though he has discovered something new, doesn't  
it?

7

8

9

A. And the error is perpetuated.

10

11

Q. So, you say that that statement,  
that the distribution of digoxin into tissues of 30  
is not correct?

12

13

A. I think it is not correct,  
the assumption is not correct.

14

15

Q. And do you know what the  
right answer is?

16

17

A. I do not know, it is different -  
his data suggests that it is different for every  
tissue.

18

19

Q. Yes.

20

A. But I have no way, and he  
doesn't, of knowing what it is for each tissue.

21

22

Q. Does anybody know?

23

A. And it is probably widely  
variable between infants by age and individuals.

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Kauffman, cr.ex.  
(Symes)

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Q. Does anybody then know what the half life of digoxin distribution into tissues is?

A. To my knowledge, no.

Q. When you were making your calculations then with respect to the time of administration basing it on the fact that there was eleven seventy-seven grams in heart tissue on death what half life did you assume?

A. I did not assume a half life into tissue.

Q. Would it be necessary to do so to work back from eleven seventy-seven nanograms per gram to determine the time of administration?

A. No. To calculate the extreme possibilities it was not necessary to do that and that's why I didn't calculate any other possibilities because I had no basis for assumptions to do so.

Q. Dr. Kauffman, can I change one assumption and, that is, we knew that Justin Cook, we know from the chart that Justin Cook was a very sick baby and had had a blue spell at 1800 hours.

A. The evening before?

Q. Yes, shortly before.

A. Yes.

Q. And that obviously it was a





12 1 very severe blue spell and that propranolol or Inderal  
2 was given IV and that the patient pinked up  
3 immediately. Would you agree with me - I should also  
4 tell you that it is our understanding that because  
5 of the real concerns about this baby, the baby was  
6 placed on constant nursing care, which is one to one  
7 nursing.

8 A. I recall that.

9 Q. Would you agree with me that  
10 after 1800 hours this baby was at substantial risk of  
11 having a second blue spell?

12 A. I think because of the baby's  
13 underlying heart defect he was at a continuing risk  
14 for having additional cyanotic episodes.

15 Q. If you look at page 29 of the  
16 chart, which I believe is the nursing note.

17 A. Pardon me until I get the chart.  
18 Which place, please.

19 Q. Page 29, sir.

20 A. 29, okay.

21 Q. If you read the nursing note  
22 then for her description then of what happens to the  
23 baby at 3:45 are the symptoms or clinical observations  
24 made at 3:45 consistent with a second blue spell?

25 A. Yes, it is consistent with a





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tet spell.

Q. If then we change your hypothesis with respect to the calculations and, that is, what is observed at 3:45 is not reaction to digoxin toxicity but instead a second blue spell, would you please do your calculations again as to what is the earliest and latest times for the administration of digoxin?

A. You mean give estimates again?

Q. Please, would you.

A. Well, let me see.

THE COMMISSIONER: I take it we are to assume that 4:20 is the first effect of digoxin?

THE WITNESS: Well, that was what I was wondering about. I am not sure that that is what I want to assume.

MS. SYMES: Let's assume then that this was not, this was just a blue spell.

THE COMMISSIONER: Well, we know that, we know that.

THE WITNESS: But I want to see what was going on in that intervening 40 minutes, or whatever it is, 30 minutes.

MS. SYMES: Q. There is both the arrest note and the nurse's note. There are two





Kauffman, cr.ex.  
(Symes)

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doctors' notes and one nurse's notes on the events. They are found in pages 27 to 29.

A. Why don't I start on 27 and look at them.

THE COMMISSIONER: I think we will rise now for lunch. Have you any thoughts on how much longer you will be?

MS. SYMES: I will be quite a bit longer.

THE COMMISSIONER: You mean something like several days?

MS. SYMES: I have two more children to discuss; not in as great a detail.

THE COMMISSIONER: Well, obviously we are not going to get through today, there is no point in exercising ourselves about it, but I have conveyed some sort of undertaking to Dr. Kauffman that if he comes back it is for only one day. Is there some way that you could shorten the - you see, if we knew the ultimate question we could sometimes answer the ultimate question without going through all the experiments beforehand. That seems to be the problem with the exercise that you are going through now. We go through all of this and then at the end the ultimate question is relatively easy to answer.







N/DM/ak

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MS. SYMES: Well, Mr. Commissioner,  
I don't think that is going to turn out to be that  
simple.

THE COMMISSIONER: All right. At  
any rate at the moment now you would like Dr. Kauffman  
to assume that at 0345 that was just a blue spell,  
and whenever he comes to a point where he can say  
it is not a blue spell it could conceivably be a  
blue spell that produced death.

MS. SYMES: I'm sorry, sir.

THE COMMISSIONER: It could be a  
blue spell that produced death at 0345, it could have  
been the cause of death, conceivably.

MS. SYMES: Yes. It is conceivable  
that this child died from a blue spell.

THE COMMISSIONER: Could you just tell  
me what you are trying to prove and I will ask  
Dr. Kauffman not to listen.

MS. SYMES: All I am trying to do  
is to establish "the time window" as Mr. Brown phrased  
it in which digoxin could have been administered after  
3:45.

THE COMMISSIONER: Yes.

MS. SYMES: And then the question  
will come as to whether or not that could have been





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N2 a medication error.

THE COMMISSIONER: Well, Dr. Kauffman has in his report given the times, the minimum - the doses and the times he has given all of that, and that is not enough for you.

MS. SYMES: Oh, no.

THE COMMISSIONER: You wanted to have something else.

MS. SYMES: Sir, that was based on one assumption, this is now an entirely different assumption ---

THE COMMISSIONER: The assumption is 0345 had nothing to do with digoxin, so you are saying digoxin was administered some time after that, is that what you are saying?

MS. SYMES: Yes, or that it was administered then or afterwards, yes.

THE COMMISSIONER: All right.

THE WITNESS: Shall I respond now?

THE COMMISSIONER: Well if you can, can you respond to it now?

THE WITNESS: I was trying to look and see what had gone on between. The baby apparently had a seizure shortly after that blue spell and that very well may have been related, may have been a





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2  
3 cyanotic seizure, it is hard to know. It could also  
4 be a symptom of a bolus of digoxin, but it wouldn't  
5 be unreasonable to say it was a cyanotic seizure.

6 Then a number of things happened  
7 according to the note. I suspect one of the better  
8 chronological descriptions is on page 29. They gave  
9 oxygen after the cyanotic spell 100 per cent to breathe,  
10 and started to take vital signs. The baby began to  
11 have a seizure then which was right around the cyanosis,  
12 and that is described. The vital signs at that point  
13 were fairly normal. An urgent call was placed and  
14 propranolol - on his arrival the physician gave  
15 propranolol and I guess that was the first .4 milli-  
16 litre dose. Shortly thereafter another dose of .2  
17 was given and then the exact time is not here, but  
18 the note is the babe's apex then began to dip, it  
19 was approximately 72. Because of the bradycardia  
20 I assume atropine was given to raise heart rate and  
21 then they tried to give morphine, they did give  
22 morphine which was an attempt to reduce the cyanosis.

23 Then it looks like things were rapidly  
24 progressing over that very minute time, and the baby  
25 really continued to be in trouble. So it is hard for  
me to see a note prior to the arrest at 4:20 that  
really - it is kind of a continuum and so it is





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3 difficult for me to tie it into anything that tells  
4 me anything suddenly changed there.

5 You see the event from the cyanosis,  
6 at least my perception is that it was kind of a  
7 continuum, not something suddenly. So it is difficult  
8 for me to give you - I can say if this was a pure  
9 cyanotic spell and the arrest was due to digoxin,  
10 it was administered somewhere in that 39 minute  
11 period and it is hard for me to tie it down more than  
12 that.

13 Q. That is perfectly reasonable  
14 then. If 0345 was a blue spell, the digoxin could  
15 have been administered any time thereafter.

16 A. If we say the arrest was due  
17 to the digoxin, I think it is difficult, and this  
18 may be helpful to you, it is difficult for me to  
19 conceive that it was given less than 15 minutes prior  
20 to the arrest, so that would give you a 15 minute  
21 additional window.

22 Q. So that would be anywhere from  
23 3:45 to 4:05?

24 A. I don't know whether that is  
25 helpful or not.

Q. Could you just answer the  
question, is it possible that this child who had had a







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severe blue spell at 3:45, could he have arrested at 4:20 minus digoxin?

A. Oh I think his severe "Tet" spell could have been associated with an arrest. I think in the absense of any digoxin data that would have been a very reasonable assumption.

THE COMMISSIONER: Yes, well, now are we satisfied, are you satisfied?

MS. SYMES: Well he has created a time that it could have been I believe anywhere from 3:45 to 4:05.

THE COMMISSIONER: Yes. Now are you going to pursue it further?

MS. SYMES: Not on that time, no, sir.

THE COMMISSIONER: I just wanted to know. What are we coming to? Now you are going to say it was one of the drugs I take it that was administered by error between 3:45 and 4:05, it that it, is that what you are getting at?

MS. SYMES: Yes.

THE COMMISSIONER: Yes, all right. Well, can we go on then to something else?

MS. SYMES: Certainly.

THE COMMISSIONER: I don't want you to do it now, are we still going to go back on this





N6 thing?

MS. SYMES: I have two more questions to ask about this.

THE COMMISSIONER: Let us have them now so we can at least come back to something else.

MS. SYMES: Something new?

THE COMMISSIONER: Yes.

MS. SYMES: Q. If this child at 1800 hours, I believe you went through this yesterday, was given propranolol and it appeared to work very quickly.

A. That was my impression from the chart, that the baby pinked up and seemed to respond to that 1800 hour dose.

Q. If the baby, taking your second hypothesis, at 3:45 was having a second blue spell, I gather that you would expect that .4 and .2 millilitres of Inderal at 3:45 and 3:55 should have pinked up the baby?

A. Well, I don't know. If the baby had responded before I think it is a reasonable assumption that the baby would respond again; but I don't think it should necessarily be any surprise that the baby may not respond too.

Q. But normally you would expect





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that if it worked once it should work again?

A. Well, I don't totally agree with that, you can't always expect that, the patient never responds the same everytime, that is why I said it should be no surprise particularly that the baby may not have responded.

Q. But Dr. Kauffman, in a hypothetical, if digoxin were given at 3:45 instead of Inderal, I gather it is clear that you wouldn't expect the baby to pink up?

A. No, I wouldn't.

Q. You would not expect the administration of digoxin to this baby to help him in any way?

A. I would not.

Q. And if digoxin were administered at 3:45 instead of Inderal, are the remainder of the notes on page 27, 28 and 29 consistent?

A. I'm sorry, if what?

Q. If digoxin were administered instead of Inderal?

A. At 3:45?

Q. And 3:55.

A. And 3:55.

Q. By the results the rest of the





1  
2 notes, are they consistent?

3 A. I think if you assume that  
4 the blue spell at 3:45 was not in any way related to  
5 it.

6 Q. That is my assumption.

7 A. That is a given assumption I  
8 think the way we are talking now, and could his  
9 symptoms have been consistent with a dose of digoxin  
10 administered at 3:55, 5 minutes apart under this  
11 scenario? I think as I read it that it could be,  
12 he would not be expected to respond in terms of  
13 decreasing of cyanosis, that would not be inconsistent  
14 with his apical rate dip and it would not be inconsis-  
15 tent with the bradycardia later on, 15 to 20 minutes  
16 later, and it would not be totally inconsistent with  
the arrest and the ability to resuscitate the baby.

17 MS. SYMES: Can we take the break  
18 then, that is all the questions I have on patient  
Cook,

19 THE COMMISSIONER: On Cook, yes.  
20 Well, I just have one. Is it consistent with the  
21 readings that were found?

22 THE WITNESS: No, I don't think so.  
23 I consider that and I considered, well I had to  
24 consider that the readings that was the thing that  
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bothered me, I couldn't reconcile that scenario with  
the tissue concentrations that were found with that  
kind of a bolus that we are postulating under those  
circumstances.

THE COMMISSIONER: Yes, all right.

Then until 2:30.

---Luncheon recess.

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--- On resuming at 2:30 p.m.

THE COMMISSIONER: Yes, Miss Symes?

MS. SYMES: Mr. Commissioner, at the very end of the break or just before the break you asked Dr. Kauffman whether an administration of digoxin at 3:45 and 3:55 was likely, and I believe the answer he gave was no because of the --

THE COMMISSIONER: Whether it was consistent with the readings of digoxin levels.

MS. SYMES: Yes, he said in his opinion it was not consistent with the levels of digoxin in tissue.

THE COMMISSIONER: Yes.

MS. SYMES: Q. Dr. Kauffman, was that your --

THE COMMISSIONER: No, he said it was not consistent with the digoxin levels - was the question I asked him, and he said no.

MS. SYMES: Q. Sir, was it consistent with the level of digoxin in serum?

A. If you only had that serum concentration and didn't have to deal with that myocardial concentration it would be easier to reconcile, yes.

Q. Now just so that I can understand





AA.2

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because quite frankly your answer puzzles me in light of the previous evidence that you gave to me about the distribution into tissue.

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If the digoxin were administered at 3:45 or 3:55, in that range, there would be 1 hour and 11 minutes to distribute or 1 hour and 5 minutes to distribute. Do you agree?

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A. Yes.

9

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Q. And in that time 75% of the digoxin would have left the serum?

11

A. No.

12

Q. The half life?

13

A. That is not 75% of the digoxin in the serum. I thought I explained that this morning.

14

15

Q. Sir, I am going to do serum first and then tissue.

16

A. Okay.

17

18

Q. If we have 100 units in serum at the start, after 1 half life we will have 50? Correct?

19

20

A. Well, are you talking about alpha half life or beta half life?

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Q. Alpha half life.

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A. No, that is not absolutely true because as I explained earlier that is a hybrid

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constant which includes the disappearance due to elimination as well as distribution.

Q. I understood that, sir, and --

A. So it would be somewhat less than the amount, and if you had the beta you could feather it out and say - let me show you something.

If you draw a curve similar to what Dr. Spielberg - you gave us part of Dr. Spielberg's evidence, the exhibit - and you have a curve that is something like this, and you say this is the alpha phase and this is the beta phase.

This slope here is not truly distribution, and the way you find out what the rate of distribution out is you take the terminal slope that you have and you extrapolate that back to time zero and you measure the difference at each point in time between what the predicted level by extrapolating your beta slope to what it is here, and you will get then a different slope that looks something like this.

The slope of this actually represents the decline, the rate of decline in concentration due to distribution, and that is not what we have. You usually don't differentiate that.

This curve here represents a combination of distribution and elimination, so if you say that







AA.4

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that slope represents - totally represents only  
distribution, it is not correct.

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Q I understand that, but did we  
not agree that at the first alpha phase that the  
distribution predominates over the elimination?

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A. It is the fastest rate constant.

7

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Q So although my number might  
be slightly inaccurate in theory one half of the  
digoxin in the serum goes out in the first --

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10

A. You are half way to equilibrium.

11

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Q Half way to equilibrium, and  
in 2 half lives I should be approximately three  
quarters of the way to equilibrium?

13

14

A. That is correct.

15

16

Q All right. Now that was the  
half life of the distribution of digoxin from serum.

17

18

When I asked you about the distribution  
into tissue I referred you to Dr. Hastriter's article.

19

20

A. Right.

Q In which he had said that the  
half life was 30 minutes.

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A. That is correct.

23

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Q And you told me that was in  
error.

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A. Yes.

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AA.5

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Q And you told me in fact that no one knows what the half life of distribution into tissues is?

A Into specific tissues, that is right.

Q If no one knows what the half life of distribution into tissues is, how can you say with any certainty how much digoxin there would be in the myocardium 1 hour and 11 minutes after a drug had been administered?

A I think we can say how much would not have been in myocardium. I don't think you can say how much is in myocardium. But at least we know that if we are early into the distributive phase there is going to be very little, and the further we get into the distributive phase there would be more.

The problem is that the so-called distribution out of serum, this so-called alpha half life, is a composite of a whole number - is the sum of a whole number of sub constants. I don't know if you know what I mean.

The distribution of the drug is very complex. It has to go through multiple tissue membranes to get finally to the receptor site. It goes into the serum. It has to go across several





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cell layers to get into the extracellular fluid. It has to diffuse across any membrane - wall or membrane as in humans, membrane around the various tissue cells, and even within the cell to get to certain receptors it has to dissolve into subcellular organelles to finally get to the place where it is going to do its thing.

So each of those little processes will have its rate constant for movement or active transport or whatever the mechanism is, and all we are saying is that we are describing a whole composite of these. That is why it doesn't say anything to me about the rating at which - we know that this represents some overall rate that the drug is equilibrating within the body, but we don't know anything about what is happening in a specific tissue.

It can't be more than this, but it can be considerably less.

Q. But, Dr. Kauffman, given a dose at 3:45 in the morning I gather the state of the art is such that you cannot say with certainty how much digoxin would be in heart tissue 1 hour and 11 minutes later?

A. I can't give you an absolute number. If you gave me a dose and a time I could tell





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you what fraction of the dose might have been eliminated by that time and what might have been still in the body at that time, but I can't tell you exactly what the concentration would be in any particular tissue at any point in time.

I can tell you the likelihood that it would not be there at, you know, at some time, but I can't give you specific estimates, no.

Q I presume you yourself have not done this test?

A Which test?

Q That is a loading of digoxin and then measuring heart tissue after death?

A No, I certainly have not.

Q And the only thing we have is the case report which has been marked Exhibit 276 of Dr. Hastreiter?

A Well, that isn't the only thing we have. We have that and we have a lot of other literature that reports poisoning with tissue and serum levels.

Q But with respect to tissue.

A There is a lot of other tissue data in the literature.

Q Could we take the one.







AA.8

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A. Okay.

3

Q. Which is Exhibit 276.

4

A. Let's look at this one.

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Q. In that we saw that after 45 minutes from administration until death the left ventricle achieved 1252.

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7

A. Yes.

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Q. I believe, Dr. Kauffman, you told me that in heart one would expect that it would continue to accumulate; that is if the alpha phase out of serum is 30 minutes, that you said the heart was a good receptor but a slow one?

13

A. Well, I am postulating that based on what little I know about it.

14

15

16

Q. So we know then if the camera took a picture after 45 minutes of administration that the left ventricle achieved 1252 nanograms per gram?

17

18

A. From this data we know that in this patient, yes.

19

20

21

Q. And we also know - I mean you are hypothesizing that if the distribution had been allowed to go on a bit further, that the concentration in heart may well increase?

22

23

A. I think that is possible.

24

Unfortunately --

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AA.9

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Q. I'm sorry?

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A. I was just going to say

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unfortunately the patient succumbed before that took place.

5

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Q. But Justin Cook lived for another 15 to 20 minutes beyond this example.

7

A. You mean an hour and --

8

9

Q. An hour and 11 minutes, et cetera, whereas this one lived only 45 minutes.

10

A. Okay.

11

12

Q. So given that then, that the level of digoxin in Justin Cook then may have gone up from let's say 4:30 to 4:45.

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14

A. It may have.

15

16

Q. But we don't know from the state of the art of digoxin, we just don't know, do we?

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18

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A. That is right. But you see the problem I had if we go with your last postulate then we have to plug in a much larger dose than my minimum dose, and that was my dilemma.

20

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Q. Dr. Kauffman, the size of the dose depends very much upon the time at which it was administered before sampling?

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A. Yes, because the volume of distribution that you use in the calculation is much larger.





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Q. And in the original calculations that you had done at the very beginning with respect to Cook, the timing that you had assumed was part way down that alpha curve, wasn't it?

A. Well, I am not sure what you mean.

Q. When you originally did the calculation with the volume of distribution at 1.3 and you got out the doses?

A. That was assuming early in the alpha curve. Quite early.

Q. Quite early.

A. Quite early.

Q. How early within it?

A. Well, I can't tell you how early but early enough that there would be insignificant - there would be an adequate time for a toxic amount of digoxin to get to the receptors in the myocardium.

Q. Would that be within an hour of 4:30?

A. Well, I think it could be. That is why I said that I think - going with the scenario that you described --

Q. The second scenario? That is that 0345 was a blue spell?





AA.11

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A. Yes, as opposed to digoxin

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Q. As opposed to digoxin?

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A. Yes, but the drug could have

5

been given - whether you want to define 3:45 or 4:20

6

as the time of onset of digoxin induced symptoms,

7

that the drug could conceivably have been given 15,

8

20 minutes beforehand. I think that is unlikely but

9

if we ignore the tissue concentration.

10

You see the problem in accepting that

11

is that there was such a high concentration in the

12

ventricle when it was actually measured, and if you

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want to posit that that concentration could have

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occurred in the ventricle in half an hour after the

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dose was given, you have to postulate an enormous

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dose.

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Kauffman, cr.ex.  
(Symes)

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If you want to --

- certainly much larger than what we did the arithmetic on this morning where we came out with a part of an adult vial. If you want to postulate that dose in that time interval you just can't explain a tissue concentration of 1100.

Q. But if we have - I think we have done this before - but if we have an hour and 11 minutes to distribute the tissue we may very well get values in excess of those found by Dr. Hastreiter.

A. How do you know that?

THE COMMISSIONER: Just a moment.  
Miss Cronk.

MISS CRONK: Excuse me, sir. Again, I apologize for doing this all day but I well recall an occasion not many weeks ago when, in discussing the case of Kristin Inwood, I had suggested to another witness that she died at the time that her death was pronounced and I was quite properly chastised by my friend Mr. Roland, and I deserved it at the time, for the error that I made, and it seems to me that that should now hold true for Miss Symes. We know that the arrest for Justin Cook was called at 4:20, we know a sample was taken at 4:30, this witness has said that in his view the process of dying could well





1  
2 be described to have commenced at 3:45 and onwards.

3 I think if we are going to postulate  
4 a time frame then Miss Symes in fairness to Dr.  
5 Kauffman has to at least allow for the possibility  
6 that the child died before he was pronounced dead.

7 THE COMMISSIONER: I don't think he  
8 could have died before 4:20.

9 MS. CRONK: She suggests an hour and  
10 11 minutes and that means the child died at 4:56.

11 THE COMMISSIONER: Yes, 4:56, yes.  
12 Well, there is that problem, Miss Symes.

13 MS. SYMES: Well, we had established,  
14 Dr. Kauffman, that the child's circulation was  
15 maintained maybe imperfectly by CPR after 4:20,  
16 according to the chart.

17 A. There may have been some  
18 circulation. You see, the problem I am having, I  
19 pointed out the other day - may I erase your black-  
20 board notes?

21 Q. Sure.

22 A. I pointed out the other day  
23 that we are talking about a child who had never  
24 received digoxin before. So, if indeed a dose was  
25 given, as we are talking now, digoxin was, denova  
digoxin was going in to the myocardium some time after





1  
2 that dose and at some rate that we have no way of  
3 measuring. We know how fast, we have an approximation  
4 within a range of how fast it distributes out of the  
5 serum but we don't know how fast it actually goes  
6 into the myocardium. And then we have a gradual  
7 rising - let's say this is the heart.

8 Q. Dr. Kauffman, could you do it  
9 on the sheet of paper so that we could save it maybe?

10 A. Okay. Let's talk about a  
11 hypothetical rise in concentration in the heart after  
12 the dose. We won't put units on this because we don't  
13 know what it is but we are describing it in general,  
14 so, you would expect the total digoxin in the myocardium  
15 to gradually rise with time after the dose until it  
16 reached some equilibrium after, let's say four to six  
17 hours, an equilibrium within the body is established.

18 Now, as I said the other day, the total  
19 concentration of digoxin in the heart is comprised  
20 predominantly of digoxin which isn't doing anything  
21 and which is bound to sites which have lower  
22 affinity than we think the specific active binding  
23 sites have.

24 So, the first drug that gets there,  
25 because the affinity constant is so much higher for  
the specific receptor, the first drug that gets there





1  
2 is going to be attached to those first before any  
3 sites get any.

4 So, as the first binding sites with  
5 the highest affinity becomes saturated, approach  
6 saturation, then drug starts being bound to any  
7 sites with the next highest affinity, and you probably  
8 have, and I don't know this as a fact but if it's  
9 like other situations in nature you probably have  
10 secondary and tertiary bindingsites which are not  
11 active but the drug attaches to them with some degree  
12 of affinity.

13 The drug binds to these sites at a  
14 much lower - these sites will all be occupied at a  
15 much lower concentration of drug than these sites.  
16 So, what you have is the drug, the concentration  
17 arising in the myocardium and the first sites that  
18 it is going to bind to are going to be the ones  
19 which are going to do something to the myocardium  
20 cells to change their electrical characteristics  
21 and change their function.

22 After they are approaching saturation  
23 then it is going to start binding to other sites.  
24 I don't know at what total concentration this child  
25 would have achieved a critical level of digoxin  
which would have produced enough binding to active







1  
2 sites to have produced toxicity but it would have  
3 been at a much lower concentration than this total  
4 concentration of 1100.

5 So, it is not a problem to me at all  
6 in a kid who did not have any digoxin on board that  
7 critical symptoms could show up 15, 20, 30 minutes  
8 after a large dose, much longer than what we have  
9 been postulating with the minimum dose, and still  
10 not have very high concentrations if you took the  
11 picture at that point in time if you measure total  
digoxin, which is what we measured.

12 If you then allow more time, several  
13 more hours after the dose we are talking back toward  
14 2:30, 1:30, then you have already saturated these  
15 primary sites, these high affinity active sites and  
16 you are going to have the rest of it distributed  
17 into the lower affinity binding sites where it stays  
until it redistributes to something else.

18 So, there is no problem to me to  
19 explain this child developing critical symptoms  
20 within 20 or 30 minutes after a large intravenous  
21 dose, but it is a problem, a serious problem to me  
22 to reconcile that with a myocardium total concentration  
23 of 1100 unless you got an enormous dose comparable  
24 to the case described by Dr. Hastreiter.  
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Q. Okay. That diagram is very helpful. Does it accurately describe what you have plotted is the concentration of digoxin in tissue to time?

A. Total heart concentration versus some time and I can't put units on it.

Q. And that's because of our lack of knowledge that you can't calibrate the X scale?

A. We don't know what the rate is that this curve describes.

Q. I am going to ask that that be marked as the next exhibit. It may be possible to do a smaller version of it but I think that is very helpful.

THE COMMISSIONER: By all means if you want to have it as an exhibit. I will just tell you it really doesn't help us an awful lot because the Doctor can't tell us what it represents. All it is, it is a curve.

MS. SYMES: It is a curve that rises over time.

THE COMMISSIONER: We have had this sort of curve before, you know, we haven't put it in. We have had this from several witnesses before who have





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said that this is the kind of curve and they weren't able any better than the Doctor was to give the time. He can't tell us, not only can he not tell us what time digoxin gets into the tissue, nor can he tell us which particular tissue it gets into.

MS. SYMES: He is talking, sir, particularly the diagram is heart tissue.

THE COMMISSIONER: Well, yes, but he can't tell us that either.

THE WITNESS: Please, if you do keep this, please do not attach any quantitative interpretation to this.

MS. SYMES: No, that is understood.

THE WITNESS: It is to illustrate a concept.

MS. SYMES: Understood.

THE COMMISSIONER: No, we won't erase it and if it can be somehow or other photographed and reduced then we will do something with it. Well, I suppose there is no reason, if you want it that badly, we just can't take that off now, Mr. Registrar, and put a number to it and fold it up.

MS. SYMES: Dr. Kauffman, I had asked you at the beginning of the day which of the babies the Police and the Crown Attorney had specifically





1  
2 asked you to look for and you had said that you would  
3 check your notes.

4 THE COMMISSIONER: What number is that?

5 THE REGISTRAR: 277.

6 ---EXHIBIT NO. 277: Diagram by Dr. Kauffman.

7 THE WITNESS: I apologize, if I have  
8 it it will be in the file I am fumbling through here  
9 now. It could be one other place and if you bear  
10 with me I will look quickly. I vaguely recall having  
11 a small piece of paper that I had noted some things  
12 down and all I can find now are my handwritten lists  
13 of patients who had exhumed tissue concentrations  
14 and then the list of the patients that I reviewed for  
15 the CDC.

16 Q. Dr. Kauffman, perhaps we could  
17 do it from memory then, just in terms of which ones  
18 do you remember being asked to pay particular  
19 attention to. Was Cook one of them?

20 A. Yes, I am certain that Cook  
21 was one of them.

22 Q. Was Lombardo?

23 A. I suspect so but I don't know  
24 for certain.

25 Q. Was Pacsai?

A. I believe Pacsai was.







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Q. Was Inwood?

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A. I think so but I am not

4

certain.

5

Q. Was Miller?

6

A. I am fairly certain Miller

7

was.

Q. Was Belanger?

8

A. I believe so.

9

Q. Was Hines?

10

A. I am not certain but I think

11

so.

Q. Was Gage?

12

A. I don't know.

13

Q. Estrella?

14

A. Yes.

15

Q. Gionas?

16

A. I don't know, I don't remember.

17

Q. Okay. Do you recall on

18

Rating No. 1, which of course is the bottom category

19

on 273, any of those that you were asked to pay

20

special attention to?

21

A. I believe Onofre may have been

22

on that list, but again, I am not certain.

23

THE COMMISSIONER: Can you think of

24

any reason why ---

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THE WITNESS: And Woodcock I think was  
on that list.

4

THE COMMISSIONER: Why would you have  
considered Onofre and Woodcock in your first report?

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6

THE WITNESS: Well, that's what I am  
saying, I think they were on that list because that  
list probably influenced me to give a specific written  
report on those particular patients.

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I suspect, although I can't find the list, I suspect that I used that priority list to guide me in which ones to be sure to give something in writing on, and then I probably discarded it afterwards not thinking I would need it in the future.

Q. You have given us twelve possibilities.

A. Yes, I am sorry, my memory doesn't serve me a year later for that specific thing.

Q. I would like to turn now to Allana Miller. I gather on Allana Miller, her chart, I think these are all without question, the only things I am going to put to you, that six hours after her death the digoxin level was taken and that resulted in 78 nanograms per ml. in serum.

A. Yes, my report has serum digoxin level obtained six hours post mortem as 78 nanograms.

Q. And that the tissue concentrations were 5 to 7 nanograms per gram.

A. Yes. I believe those were, I have it that those were preserved tissues.

Q. And that there was nothing in the lungs.





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A. No, I don't have a note here about the lungs, I would have to refer to the report to make sure about that. Let me get Mr. Cimbura's report.

Q. It is on page 5.

A. Okay.

Q. Of the January 11, 1982 Exhibit 95A.

A. Well it says --

Q. You see T10(b).

A. .. 4 nanograms of digoxinlike substances. No digoxin could be detected."

Q. No digoxin could be detected. Now I believe that yesterday you said, at page 5690, Volume 71, that it was your opinion that the administration of the digoxin was one hour before the onset of critical symptoms.

A. Excuse me, what page are you referring to?

Q. Page 5690.

A. Okay.

Q. Now, the critical symptoms I believe commenced at 1:45.

A. I described 1:45 description of irregularity in child's apical heartbeat and gagging







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CC32

and vomiting.

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Q. And then in Miller we have whatever we are going to call it, the Code or resuscitation efforts ceased at 3:27.

THE COMMISSIONER: Yes, Miss Jackman?

MS. JACKMAN: There was a further explanation of what was said on 5690 by the doctor, on 5691, and perhaps it should be put to him as well.

THE COMMISSIONER: Yes, than, you. What volume is this?

MS. SYMES: This is in Volume 71, Mr. Commissioner.

THE COMMISSIONER: Yes, 5690, 5691, yes, all right.

MS. SYMES: Q. Then the question is: "Q. Doctor, is it then your best judgment, bearing in mind that the gagging, the vomiting and the bradycardia that you have mentioned are recorded as having occurred or at least starting to occur at 1:45 in the morning, is it then your best judgment that this dose would likely have been administered about an hour





CC4

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before that time?"

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A. I'm sorry, where are you reading?

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Q. 5691.

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A. Okay.

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Q. "A. I can't be precise about the hour but I would agree that it was most likely administered prior to the onset of those symptoms which appear to be the beginning of a series of worsening symptoms."

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Is that fair? So is that the benchmark we take then 1:45, an hour before that?

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MS. CRONK: Well, read the last sentence, Ms. Symes.

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MS. SYMES: Q. "...It could have been as early as 30 minutes, maybe probably within an hour."

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A. "...maybe probably within an hour."

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I think what I --

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Q. And on the next page just to complete:

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"...I gave outside numbers of 60 to 90 minutes to be generous but I really believe it was probably shorter than

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90 minutes."

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A. Yes.

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Q. So that would have been 30 to  
60 minutes before 1:45?

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A. If you take the range of what  
I have said I could live with it most comfortably.

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Q. So that would either be at  
12:45 -- Oh, I'm sorry, that is 0045 or 1:15.

9

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A. I think that is correct, that  
is 30 minutes before to maybe an hour before.

11

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Q. And this baby then got into  
difficulties but continued to be treated until 3:27,  
is that correct?

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A. I don't have that in front of  
me.

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Q. I believe it is in the chart,  
page 42 of the chart of Allana Miller.

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18

A. Page 42?

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Q. Page 42 of the chart, I am just  
reading the notes of the nurse who was recording it.

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A. At 1:45 her apical rate was  
irregular and decreased, then she -- she had the  
gagging and vomiting, very thick clear mucus, was  
suctioned; she received 6 mg. of Lasix at 2:40 and  
then she began to have a seizure and there was no





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heart rate; then CPR was initiated I assume very shortly after 2:45 and then she was pronounced dead at 3:27.

Q. Again, in terms of the timing that you have given; if we take the administration of the drug from 0045 to 1:15 to 3:27, that is if the drug had that long to distribute, that is at least a minimum of three hours to distribute, would you agree?

A. Yes.

Q. Which according to the distribution from serum that it should have been almost completely distributed?

A. That is true, or at least almost 90 per cent, 85 to 90 per cent.

Q. And again going back to that Hastreiter caper, if digoxin had been given and given three hours to distribute, would you not have expected to see that in tissue?

A. Well, there was some in tissue.

Q. Would you not have expected a lot more in tissue?

A. It would depend on the dose she got. If you postulate an enormous dose, then, yes, the closer to the time of death you postulate the dose







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being given the higher the dose you have to postulate to get higher concentrations in tissue. You see the concentrations in tissue are not only a function of time, they are a function of the quantity that is placed there to diffuse into the rest of the body.

Q. I understand that, doctor, but it was your hypothesis, or your best opinion that the drug would have been administered from 0045 to 1:15, which you have agreed is at least three hours before 3:27.

A. That is right.

Q. And all I am saying is in that amount of time, if we look at the Hastreiter example, wouldn't we expect to find over a three hour period of distribution digoxin in tissue of the heart?

A. Yes, we would.

Q. And would we expect, if a fairly large dose of digoxin was given at 0045 or 1:15, that the digoxin level in tissues would be relatively large?

A. Yes, that is true too.

Q. Because we don't find that --

A. We don't? I didn't have, the reason I asked that is that the fixed tissue, I really can't put a quantitative value on that. I





Kauffman  
cr.ex. (Symes)

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CC8 2 said in my report and said earlier this week that  
3 about all I can do with that is to say that it is  
4 there. How much more, I think that represents the  
5 least it could have been, but how much more than that  
6 I can't say.

7 Q. Would it be times 2?

8 A. I don't know.

9 MR. HUNT: Mr. Commissioner, Mr.  
10 Scott went over this matter in tremendous detail  
11 yesterday, and in my submission it is just repeating  
12 it unless there is a new point to be made.

13 MS. SYMES: Q. I am simply trying  
14 to -- I am going to move on to something that certain-  
15 ly Mr. Scott did not talk about. My question to you  
16 is, you said that in the Miller -- because the levels  
17 of digoxin are in fixed tissues, it is difficult to  
18 make very solid predictions about what happened in  
19 this particular case.

20 A. It is difficult to know what  
21 the concentration in the heart was.

22 Q. Is it also possible, Dr.  
23 Kauffman, that your time estimates may be wrong, and  
24 that is the digoxin could have been given much closer  
25 towards death?

A. I think that is a possibility





1  
CC9 2 if you can define death, the time of death for me.  
3 If you can agree with me -- and I am not suggesting  
4 one or the other, because death in this kind of  
5 situation for me is very difficult for me to define.  
6 If we can agree on a time for death, my answer to that  
7 would be, I think the dose could have been given as  
8 soon as approximately 15 minutes prior to whatever  
9 we call death, or maybe up to 30 minutes to 60 minutes  
10 at the outside before death, looking at this picture.  
11 I don't know when she actually died.

11 Q. Dr. Kauffman, let's look then  
12 at the Allana Miller chart. Again on that same page  
13 that I referred you to, page 42, we know that the  
14 child got into difficulty at 2:45; at approximately  
15 2:45 the baby began to seizure and become rigid and  
16 then we have a Code 25 called. Do you see where I  
17 am reading?

17 A. Yes.

18 Q. If we postulate that death  
19 occurred at 2:45 to 3:27, that is anywhere in that  
20 period of time --

21 A. So we ignore the earlier  
22 symptoms at 1:45?

22 Q. No, if we say that death  
23 occurred --  
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A. At 2:45?

Q. Sometime between 2:45 and 3:27.

A. Okay.

Q. Are you saying then that it is a possibility that the digoxin could have been given 15 to 30 minutes before that?

A. If we ignore the earlier symptoms as being the first symptoms of digoxin intoxication; and this is the same problem we have with Cook I think a little earlier, is whether or not we assume those earlier symptoms were due to the heart disease or to the effects of a large dose of digoxin.

Q. For example, if digoxin were given say at 2:40, and we take the same error theory that was put to you, that is that the Lasix which was .6 of a milligram was instead --

A. .6 millilitres. It was 6 mg. and it is 10 mg. per millilitre so it would be .6 millilitres.

Q. And the baby then weighs 6 kilograms, and you used one then on page 5703 of your evidence in Volume 71 to calculate, to use, pardon me the equation.

MR. HUNT: Would you wait for the







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CC11 2

witness to get the transcript.

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MS. SYMES: I'm sorry. Volume 71,  
page 5703, where you are doing the calculations on  
Miller.

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A. Okay I have it now.

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THE COMMISSIONER: I'm sorry, the  
page again was, oh, Volume 71, I'm sorry I had the  
wrong one.

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MS. SYMES: Q. In the equation  
then you plugged in 6 kilograms for weight, 1.0 as  
the volume of central distribution and you calculated  
then if the dose was 150 that the concentration had  
to be 25 nanograms per ml.

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A. In serum?

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Q. In serum, sir.

16

A. Yes.

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Q. And then you said at page 5707  
that that would require a multiplier of about 3 times  
in order to achieve the 78 which was in fact found,  
and you said that was somewhat unlikely, have I  
fairly summarized what you said?

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A. I said: "And if you can  
accept a multiplier threefold which I think is in the  
realm of possibility and obtaining the sample as early  
six hours after death I think that is somewhat unlikely."





Kauffman  
cr.ex. (Symes)

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CC12 2

Q. Now --

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A. I think what I was referring to, the unlikely I was referring to, is you would have that large a multiplier 6 hours after death.

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Q. Dr. Kauffman, if we instead change the volume centre of distribution as we did in the Cook case, that is we take the .6, 0.6 or 0.8 and we redo the calculations --

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A. Yes.





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Exactly the same assumptions, sir, only we change the volume of central distribution.

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If we do .6, changing nothing in your equation except that, I believe your concentration turns out to be 41.67 or 42.

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A. This is my calculation?

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Q. No, this is my calculation using the exact same equation that you used before.

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A. Okay. I would have to go through it all. I made in error when we did this before and I don't want to do the same thing again. I chose one - let's see, that would be --

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12

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Q. Your choices were 150 equals the concentration times 1 times --

14

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A. Yes.

16

Q. -- times 6.

17

A. Yes. I just did the arithmetic on my calculator. I agree with you.

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Q. You agree with me?

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A. Yes.

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Q. If the volume of central distribution is 0.8 then the concentration is 32. Would you check my arithmetic?

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A. It is in between so I will accept that it is approximately correct.

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Q. If the first is so the multiplier  
then to reach 78 is less than 2?

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A. That is correct.

5

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Q. And if we use the second -  
the multiplier is about 2.4.

7

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A. I believe - you mean the .8  
or the .6?

9

Q. 0.8, sir.

10

A. It would be approximately 2 to  
get to 70.

11

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Q. Are those multipliers more  
realistic given that the sample was taken six hours  
after death?

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A. Well, that is difficult to  
answer because as you know the multiplier, the so-called  
multiplier, this increase in concentration post mortem  
is so variable.

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Q. Yes.

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A. So I suppose the trend would  
be that you would have less of a multiplier with a  
shorter time. That is what I was suggesting a  
moment ago.

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The problem I have with these assump-  
tions, apparently the .6 is that this is a number  
that has been reported with premature infants and







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Miller was an 11 month old girl.

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Q. I agree.

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A. So she really doesn't fit. I mean we are comparing her to a different population of information.

6

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Q. But if we use the .8 the multiplier comes down considerably.

8

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A. Yes.

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Q. And if we were to - using the same assumptions then does it then become more plausible, in fact even probable that the levels in Estrella of digoxin found in serum, 78, six hours after ---

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MR. YOUNG: We are talking about Miller.

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MS. SYMES: Oh, I'm sorry, Miller.

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Q. Six hours after death could be accounted for if digoxin had been given for Lasix at about 2:40.

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A. I think it is within the realm of possibility given all the caveats that we have just mentioned.

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Q. And, Dr. Kauffman, I would like to ask you about patient Inwood now.

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First of all on 95 - I ask you for

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3 two things. First of all the report of Mr. Cimbura,  
4 95A on page 7, lists the concentration of digoxin in  
5 heart tissue.

6 And Dr. Kauffman, those values in  
7 themselves on T8 are within normal range?

8 A. Well, I don't know that I  
9 said that. I am not sure that we can say that since  
10 it was in fixed - it was from fixed tissue.

11 If you took those numbers listed in  
12 T8A and accepted those as fresh tissue concentrations,  
13 they would fall within the range of concentration  
14 described in patients on therapeutic doses.

15 But I think this was in fixed tissue  
16 so it is difficult to answer that question with any  
17 confidence.

18 Q. In other words, you can't say  
19 one way or another whether or not they are within  
20 normal range?

21 A. Well, I just said if you accept  
22 them as being from fixed tissue - I will try to be  
23 more helpful and answer you to this extent, and  
24 hopefully not get myself into too much trouble, and  
25 that is if we accept the report of the concentration  
of digoxin, not the digoxinlike substances but the  
lower concentration, and if we will accept that that





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is the least that was there, when the tissue was fresh, there was somewhat more but we don't know how much more --

Q. Yes.

A. If that was the least that was there it was at least that high, so viewing those numbers they fall within a so-called therapeutic range that has been reported. But I have reservations about saying that to you because we don't know how much the levels may have been because of the problems with the fixative that have been discussed.

Q. And if we turn to --

MR. OLAH: Mr. Commissioner, in all fairness to this witness he has previously indicated that he agreed with Mr. Cimbura's figures on page 4 on dose number 3, and that suggests that the toxic range commences at a low of 108 up to 1240, and I think --

THE COMMISSIONER: But they are in both I think, aren't they?

MS. SYMES: Yes.

THE COMMISSIONER: Aren't they in both the toxic and therapeutic?

MR. OLAH: That is correct.

MS. SYMES: Q. Now on 95C which is





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the report of Mr. Cimbura dated March 25, 1982, there is a sample called T46. Do you have it?

A. Yes, I have that.

Q. That is described in this report as reported to be serum, and I gather that there is some question about this sample.

MS. CRONK: Is my friend suggesting the sample is not serum because if she is --

THE COMMISSIONER: No, I think not. We went through all of that but there certainly is some question about this.

MS. CRONK: I am getting paranoid.

MS. SYMES: Q. Now the question about this sample, as I understand it, is that it would have been taken some time around the 13th of March, 1981 because that is when she died, Inwood, and that it was given to the Centre for Forensic Sciences on the 28th of January, 1982. That is some 10 months later.

Is that your understanding as well?

A. I knew it was some months. I didn't know how many months.

Q. Well, T46 --

THE COMMISSIONER: Well, if you will accept that.







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THE WITNESS: I will accept that.

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MS. SYMES: Just above that it says

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it arrived January 28, 1982.

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THE WITNESS: I will accept that if

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nobody has any objections to my accepting it.

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Q So it is some 10 months. And we understand then that it was subject to freezing?

A Well, I wasn't sure. I had said the other day I didn't know --

Q What had happened to it?

A Whether it had been frozen, refrigerated, both or so forth. I really can't comment on how it was handled other than to say I was told there were some uncertainties about it.

Q All right. Now because of that uncertainty, Dr. Kauffman, I understood you divided by 10?

A That is what I did in my estimate.

THE COMMISSIONER: If you divided by 10.

MS. SYMES: Pardon?

THE COMMISSIONER: I don't think he divided by 10. He said even if you divide by 10.

THE WITNESS: Yes. The context of my comment was, it is terribly high. Even if you divide it by 10 it is still at a level that would be potentially toxic.

MS. SYMES: Q But, Dr. Kauffman, I'm sorry, I have no idea why you would have picked 10. Why didn't you pick 100?





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A. I picked 10 because I thought it was such an extreme number that nobody could have any doubt that it could be a greater divisor than that.

Q. Well --

A. In my mind I felt that was an extreme assumption.

Q. But, Dr. Kauffman, I tell you now about the quality of my housekeeping. If I put a glass of milk in the fridge it doesn't seem to me to take very long until it evaporates.

A. I have never done that experiment.

MR. OLAH: We are talking about freezing.

MS. CRONK: It has nothing to do with --

MR. OLAH: What we were talking about was freezing, not with evaporation.

MS. SYMES: Q. Now if we put a tray of ice cubes in a freezer, do you agree that the water evaporates over time?

A. I can tell you I have had ice cubes in my freezer all winter and they are still there in the spring. I haven't seen a tray of ice cubes evaporate yet.

Q. You haven't?

A. No.





DD2-3

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Q. So you are saying --

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A. And I have a defrosting freezer.

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MR. OLAH: Excuse me, Mr. Commissioner --

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THE COMMISSIONER: I think it is

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better if - the old cliché about apples and oranges:

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can we not ask about blood, what happens to blood. He

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is more likely to have it - I shouldn't say this,

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Doctor. You may well have more experience with ice

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cubes but I would think he had more experience with  
blood than ice cubes.

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MS. SYMES: Q. Dr. Kauffman, have you --

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MR. OLAH: Before my friend proceeds,

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Mr. Commissioner, may I register my further objection?

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We had evidence that there may or

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may not have been a stopper on this container, and in

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all fairness to the witness in my respectful

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submission it behooves the examiner to indicate all

the facts that we have had before the court.

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THE COMMISSIONER: Well, if all the

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facts that she can give are that there may or there

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may not have been a stopper that won't help him an

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awful lot.

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MS. SYMES: No.

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THE COMMISSIONER: I wouldn't think,

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however, I think you probably know as much about the

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sample as we do, do you?

THE WITNESS: I don't know if I do or not because I don't know how much is known outside of my own knowledge.

MS. SYMES: Q. I think that the bottom line is that no one knows very much about it except that it was kept for 10 months.

It may have had a stopper on it; it may not have. It may have been frozen. It also may have been heated, and that is found in Mr. Cimbura's evidence, Volume 52, pages 1656 and 1657.

THE COMMISSIONER: But Mr. Cimbura doesn't know any more about it than we do.

MS. SYMES: No, but he is saying it may not only have been frozen but it may have been heated.

THE COMMISSIONER: It may have been taken up to the top of Mount Everest too.

MS. SYMES: Unlikely.

THE COMMISSIONER: But I don't know what effect that would have on it too. But we just don't know what happened. I don't believe there has been any evidence of what happened to it except that we did have a great fight as to whether it was blood or serum and finally it was decided it was serum.





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I think we took the evidence, not on  
oath, of Mr. Roland to that effect if I remember.

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MS. JACKMAN: Mr. Commissioner, I have  
in my notes although I don't have the page that  
Dr. Ellis had said it was heated.

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THE COMMISSIONER: All right. That is  
good. Then we have that.

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MR. SHINEHOFT: Mr. Commissioner?

THE COMMISSIONER: All right, Mr.  
Shinehoft has something to say.

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MR. SHINEHOFT: I think there were  
some experiments performed by Mr. Cimbura on heated  
samples.

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THE COMMISSIONER: Yes.

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MR. SHINEHOFT: And the conclusion  
was that it didn't make any effect whatsoever.

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THE COMMISSIONER: Yes, I think I  
remember that too. Anyway, somebody has told us it  
was heated. It was kept for 10 months. And anything  
else that you want to offer to him?

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MS. SYMES: Q. Yes. Dr. Kauffman, if  
evaporation takes place due to freezing or sitting  
out, that would raise the apparent concentration, do  
you agree?

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A. If that occurred it would have





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the effect presumably of raising the concentration,  
yes.

Q. If the sample were heated and  
liquid were driven off in the process of heating,  
would that also have the effect of raising the  
apparent concentration?

A. If there was some evaporation  
and no breakdown of the digoxin due to the heating  
you would expect the concentration to increase to  
some degree. I don't know to what degree.

Q. Dr. Kauffman, given that  
both of those may have happened to the sample, do  
you have any confidence in the level of 491 whether  
it is divided by 10 or 20 or 50?

MR. OLAH: Excuse me, Mr. Commissioner,  
I am sorry, I must object again.

We have had evidence by Mr. Cimbura  
where he has carried out a survey to duplicate the  
situation in here, and the evidence before this court  
is that there was no alteration as a result of the  
heating, so with the greatest respect to put that  
evidence to the witness is just not fair.

MS. SYMES: Just a second. The  
question is not with respect to - the question that  
I asked Mr. Cimbura was about the breakdown of digoxin.





DD2-7

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I am not touching that. I am only asking about

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evaporation of the liquid in which digoxin is.

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MR. TOBIAS: My recollection of the  
evidence of Mr. Cimbura is that that very scenario  
was put to him, an honestly identical question.

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THE COMMISSIONER: But, Mr. Tobias,  
the same question can be put to this witness. It is  
a perfectly legitimate question to ask.

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MR. TOBIAS: But in fairness should  
not he evidence that has already been put before the  
Commission be put to the witness?

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MR. TOBIAS: But the witness is being asked to give a conclusion based on a hypothetical set of facts which he has already said couldn't have taken place.

MS. SYMES: Well, just a second, how can you say that?

THE COMMISSIONER: Well, I don't know that couldn't have taken place. I am going to allow you -- would you try your question once more and we will see what the doctor has to say.

MS. SYMES: Yes.

Q. Dr. Kauffman, if this sample had been frozen, if the sample had been heated, if it had been kept with or without a stopper for ten months, could you put any degree of reliability on the figure of 491 nanograms per ml. whether it is divided by 10 or 100?

A. I did and I still do. I reduced it by what I thought was an extreme amount and said it is still high and I think it probably was really something more than what I concluded from that extreme assumption but I was trying to give the benefit of the doubt to the situation.

I can tell you that we routinely store biological samples in my laboratory for several





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EE2 2 years and reassay them again for certain things. Now,  
3 some things aren't stable but you do not see with  
4 many things, assuming the compound is stable, storing  
5 something in a freezer is not in and of itself for  
6 several years necessarily, does not necessarily cause  
7 a change in concentration. In fact, that's what we  
8 use to store biological samples that we may want to  
analyze later on.

9 Now, if you store the container  
10 open you may get some evaporative loss over a period  
11 of time and I can't really tell you rapidly because  
12 I haven't done specific experiments but I can tell  
13 you if the container is closed, the sample will keep  
14 several years in terms of volume. If you have the  
15 container open there may be some evaporation and when  
16 I thought about all of this back when I was doing  
17 this exercise I thought, well, it is unlikely,  
18 extremely unlikely in my mind that the volume would  
19 be reduced by tenfold over a period of months even  
20 if the container was uncapped, and those are the  
reasons why I went through this exercise.

21 I must tell you, I didn't really  
22 think that sample, if it was frozen for some months,  
23 reduced its volume by tenfold, but I thought that I  
24 would make that assumption to give my calculation the  
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benefit of the doubt, and I still came out concluding that that concentration was high.

Q. If the sample were kept in this sort of imprecise way, is it also possible that there could be an artefact present in it if the sample were kept open?

A. I guess anything is possible. I can't think of what kind of artefact or why it would be induced or anything like that but, you know, I hesitate to say. I am probably not going to say any time during this testimony that something is absolutely impossible but I have no basis at all unto which to agree with you that there would have been an artefact, I just don't know of any reason to assume that.

Q. It's not the best sample from which to draw conclusions?

A. It is certainly not an ideal sample.

Q. Now, this child Inwood, I gather that she had been on digoxin --

THE COMMISSIONER: Are you fairly close to the end of Inwood because I thought we might take a break sometime.

MS. SYMES: Certainly, sir.





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THE COMMISSIONER: Well, no, when  
it is convenient.

MS. SYMES: This would be convenient  
now, sir.

THE COMMISSIONER: How much longer  
do you think you will be?

MS. SYMES: I am almost done with  
this witness.

THE COMMISSIONER: With this witness?

MS. SYMES: I would say fifteen  
minutes.

THE COMMISSIONER: Yes. All right.

Yes, Mr. Tobias?

MR. TOBIAS: Mr. Commissioner, it  
would be helpful to me if you could give some indica-  
tion as to how late you intend to sit this evening?

THE COMMISSIONER: Well, I am going  
to be held personally responsible if Dr. Kauffman  
does not get his plane at seven o'clock I can tell  
you that. So, we obviously will not be sitting past  
five.

MR. TOBIAS: Thank you.

THE COMMISSIONER: And I don't think,  
I think the only thing I can do is if there is  
somebody -- the tentative date is the 19th of







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December, which is a Monday. Is there anyone who  
can now say that he will not be available on the  
19th? You won't?

MR. SHINEHOFT: That is correct.

THE COMMISSIONER: You seem to be  
the only one.

MR. SHANAHAN: 19th, sir, for this  
witness to return?

THE COMMISSIONER: Yes.

MR. SHANAHAN: A terrible day for me,  
especially if we hit the point today where it is  
just the parents left.

THE COMMISSIONER: Well, we are  
not going to get to that point because we are still  
going to have Miss Jackman and Mr. Olah and the  
parents but the real problem is I have more or less  
undertaken to Dr. Kauffman that he will be here just  
for one more day.

MR. SHINEHOFT: I will be out of  
the country that day, sir.

THE COMMISSIONER: You are leaving  
the country?

MR. SHINEHOFT: Yes.

MR. SHANAHAN: That's a good day to  
bring him back.





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THE COMMISSIONER: Well, I wonder if we could ask you to stand down and we will try Mr. Shinehoft and Mr. Shanahan. We will give you another fifteen minutes, we will even extend that to half an hour on the 19th if you are available.

MS. SYMES: That is perfectly agreeable, sir. It would probably make sense if I could just finish the question on Inwood which would be very brief.

THE COMMISSIONER: Well, all right, do you want to do that now before we break off?

MS. SYMES: Yes.

MR. SHANAHAN: Mr. Commissioner, if this witness is back on the 19th, where are we today?

THE COMMISSIONER: We are at 180 Dundas Street West.

MR. SHANAHAN: No, no, who is left? We have Miss Jackman and Mr. Olah.

THE COMMISSIONER: Well, but also remember we have Mr. Hunt and Miss Cronk waiting in the wings and they will probably take I would think between them half a day. So, there is the problem.

Now, you say you are not available on the 19th?





Kauffman  
cr.ex. (Symes)

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MR. SHANAHAN: The morning of the 19th I am not but if I was taken out of order I would obviously be all right.

THE COMMISSIONER: Well, if you were taken now because in the morning, you see, if you are not available in the morning, by the afternoon I hope to be well into re-examination.

MR. SHANAHAN: Well, let's see what happens over this break here.

THE COMMISSIONER: Yes, all right. Well, we are not going to have the break until after you have finished with the Inwood child.

MS. SYMES: Q. Do you have the Inwood chart, Dr. Kauffman?

A. Yes.

Q. Could you turn to page 12 of that chart, please. All I want to establish is that this child, Baby Inwood, was on digoxin and had been on it for eleven days prior to her death. I think that she was first digitalized on February 28, 1981 at the Toronto East General before she came to The Hospital for Sick Children.

In addition, we have on page 55 of the chart that she is to be continued on digoxin, and on page 75 of the chart, we have the digoxin order as





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.006.

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A. I'm sorry, which page?

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Q. Page 75 of the chart, the  
doctor's order.

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A. Yes.

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Q. It is the third one. It is

7

.006 mg. by mouth twice a day.

8

A. Right.

9

Q. So, this child then being on

10

digoxin for eleven days would have had a build-up

11

in her tissues. Do you agree with me?

12

A. Yes, she would have had a

13

gradual buildup in her tissues.

14

Q. And we know that on the 12th of

15

the third 1981 at 5:30 in the morning a medication  
error occurred, and that is part of the chart, it is

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Exhibit 113A. Maybe I will just tell you this, I

17

don't think it is in dispute, she was given Pacsai's

18

dose of digoxin and Pacsai was on 0.02 mg. by mouth.

19

A. Yes, I was aware of that.

20

Q. So, this child then would have

21

received .02 mg. of digoxin at 5:30 in the morning.

22

A. .02.

23

Q. .02 mg. of digoxin. So, we

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would expect then that digoxin would be in tissues,

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wouldn't we?

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A. Yes.

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Q. From her regular maintenance

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dose we would expect digoxin to be in tissues?

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A. Yes.

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Q. And in addition because of

8

the overdose that she received 22 hours before death,

9

would that partially explain the levels in the

10

A. Well, I think that would be

11

consistent with levels in her tissues.

12

Q. Would that mean that because

13

she had received the overdose 22 hours before death

14

that it wouldn't be surprising the levels in tissue

15

were slightly high, on the high side of normal?

16

A. I think she had her digoxin

doses held subsequent to that.

17

THE COMMISSIONER: Yes, she did.

18

THE WITNESS: So, there was nothing

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given after that error?

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MS. SYMES: Q. After 5:30 in the

morning, that's right.

21

A. That's correct.

22

Q. And she died in fact somewhere

23

about 22 hours after that.

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1  
EE10 2 A. And that dose that was given  
3 in error was something like three times her usual  
4 maintenance dose if I am not mistaken.

5 Q. .02.

6 A. And she was on .006.

7 Q. That's right, three times,  
8 slightly more than three times.

9 A. That's right. So, with all  
10 the vagaries of fixed samples and an eightfold range  
11 of acceptable therapeutic concentrations in tissue,  
12 it is hard to say whether this represented a higher  
13 concentration in her tissues or not. I would guess  
14 that because equilibration would occur over that  
15 20 hours that the concentration in her tissues must  
16 have been somewhat, a little bit more than what was  
17 there before she received that dose, obviously.

18 Q. Dr. Kauffman, if we are forced  
19 to discard that T46, the one that we talked about in  
20 Inwood as an unreliable sample, that is, that nothing  
21 can be drawn from it --

22 THE COMMISSIONER: You are now  
23 talking about the serum reading?

24 MS. SYMES: Yes, sir.

25 THE COMMISSIONER: Yes.

MS. SYMES: The serum reading.





1  
EE11 2 THE COMMISSIONER: Don't say if we  
3 are forced, say, let us say, let us assume.  
4 MS. SYMES: Q. Let us assume that  
5 we can place no reliability on T46 and then the  
6 levels we have for Inwood are only the ones that I  
7 had read you --  
8 THE COMMISSIONER: That's the  
9 tissue levels?  
10 MS. SYMES: The tissue levels.  
11 Q. -- what category would you  
12 put Inwood in?  
13 A. Well, I think I had her in  
14 category 2 originally based on those assumptions  
15 before I had that information.  
16 Q. So, can I fairly say that  
17 Inwood would go from a 4 to a 2?  
18 A. She went from a 2 to a 4,  
19 so, I guess she would go back again if we discarded  
20 that level.  
21 MS. SYMES: Okay. That is the end  
22 of Inwood.  
23 THE COMMISSIONER: Yes, all right.  
24 Well, we will take fifteen minutes  
25 now.  
--- recess.





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---Upon resuming.

THE COMMISSIONER: Now, Mr. Shinehoft,  
how long will you be?

MR. SHINEHOFT: 15 minutes to half  
an hour, Mr. Commissioner.

THE COMMISSIONER: All right, we will  
see then.

CROSS-EXAMINATION BY MR. SHINEHOFT:

Q. Doctor, my name is Jack  
Shinehoft and I represent the parents of the Baby  
Kevin Pacsai. I understand, Doctor, from the evidence  
you have given us and from your curriculum vitae that  
you are both a clinical pharmacologist and a pediatri-  
cian, is that correct?

A. That is correct.

Q. Could you tell us, please how  
much of your practice is associated with each of  
those disciplines?

A. It is hard to separate it,  
but I spend about one-third of my time during the  
calendar year in full time patient care, not all at  
the same time, but I would guesstimate it that way.

My research is all clinically oriented,  
so it is patient, this involves patient care also.  
So there is a lot of overlap, so it is hard to sort







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it out. My clinical pharmacology consulting of course is patient care. So I see patients on a regular basis, but my full time care of patients is probably a third of my time.

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Q. And that consists of the day-to-day treatment of babies, is that correct?

7

8

A. Of infants, yes.

9

10

Q. As part of your educational background and your studies, does it include the study of endocrinology?

11

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A. Only to the extent that any pediatric resident and medical student would have some instruction in endocrinology, I have no sub-speciality training in endocrinology.

15

16

Q. No, as part of the sub-speciality as a pediatrician you do study the area of endocrinology, do you not, Doctor?

17

18

A. To a certain degree.

19

Q. Have you ever heard or studied a condition known as "Transient Adrenal Insufficiency"?

20

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A. I must say I am not familiar with that condition.

22

Q. Never heard of it?

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A. Not that I can recall. I can tell you truthfully I have never seen a patient in





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whom I thought that was a diagnosis. I may have missed it, but I am not aware that I ever saw a patient with that problem.

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Q. Thank you. Now, Doctor,

Mr. Scott in his examination of you yesterday discussed certain BUN levels and potassium levels from St. Joseph's Hospital and from Chedoke McMaster Hospital.

A. Excuse me, I'm going to get a copy of the chart.

Q. This unfortunately for you, this is not contained in the chart, but you can get the chart, 106 is the exhibit number. I am afraid, Mr. Commissioner, I am probably in possession of these here, and these are the only copy of the blood level report from the Chedoke McMater Hospital.

THE COMMISSIONER: Can we put it forward as an assumption and I take it at some time we will prove it, is that all right?

Yes, Mr. Olah?

MR. OLAH: Yes, Mr. Commissioner, I'm just wondering if it would perhaps be appropriate to mark that today and maybe have it distributed or copied at some future date, I think it might be of assistance to many of us to have some of this





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documentation.

MR. SHINEHOFT: You see I have, Mr. Commissioner, three charts; I have the chart from the St. Joseph's Hospital where this baby initially attended. I have the chart from Chedoke McMaster Hospital, where the baby was transferred. Then of course I have the chart from the Hospital for Sick Children.

THE COMMISSIONER: Now, how big are these charts? Are these something I take it that we can have copies made from?

MR. SHINEHOFT: They are divided in the binder in which I have these documents, and I am certainly prepared to provide them to Mr. Elliot and to Miss Cronk for the purposes of reproduction.

THE COMMISSIONER: All right. Why don't we make the St. Joseph's chart then Exhibit 278; and the Chedoke McMaster chart Exhibit 279. Now, I take it you have no copies of those at the moment.

MR. SHINEHOFT: No, I am sorry, I don't.

MS. CRONK: I will see that they are made, sir, if Mr. Shinehoft will loan it to me.

---EXHIBIT NO. 278: Medical Chart re Kevin Pacsai, St. Joseph's Hosiptal.





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---EXHIBIT NO. 279: Medical Cart re Kevin Pacsai,  
Chedoke McMaster Hospital.

MR. SHINEHOFT: Q. I just want to  
refer specifically to one page in the - this is the  
Chedoke McMaster Hospital, Doctor, you will see on  
the left hand side of the page there is the chemistry  
report and they progress to the right side of the page.

A. Is for each column a different  
date?

Q. It is a different time.

A. A different time.

Q. The date is at the bottom,  
Doctor. You will see it is 8/3, 8/3 and then I think  
this is the next day.

A. So these are all on March 8th  
at different times.

Q. At different times.

A. Okay.

Q. Now perhaps if you could just  
read the two levels ---

A. Where is the time denoted.

Q. It isn't unfortunately. Well,  
it is right at the top, it is really undecipherable,  
but if you could just review for us, Doctor, the  
levels both as far as the potassium is concerned and







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as far as his BUN readings are concerned, do you see  
where they are, Doctor?

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A. Yes, I see where they are.

5

There are five potassium concentrations and serum  
reported. The fifth one I don't see what the date is,  
what the others are dated 8/3.

7

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Q. So that will be after he left  
St. Joseph's Hospital, is that not correct, Doctor?

9

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THE COMMISSIONER: I am sorry, I thought  
these were from St. Joseph's.

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MR. SHINEHOFT: No, they are from  
Chedoke McMaster.

13

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Q. And St. Joseph's Hospital is  
the one we discussed yesterday, the level of 7.4?

15

A. That is correct.

16

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Q. Now these are, as I understand  
it, and correct me if I am wrong, Doctor, subsequent  
to that, this is after his transfer from St. Joseph's  
Hospital to Chedoke McMaster.

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A. These must have been done at  
Chedoke McMaster Hospital because that is the name  
on the laboratory sheet.

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Q. If you could just review for  
me the levels that they indicate both of the potassium  
and of the BUN.





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A. Okay. The first one is a potassium, serum potassium 5.6. The second one is a serum potassium 4.6. The third one is a serum potassium 3.1. The fourth one is serum potassium of 4.5. The fifth one is serum potassium of 4.1.

Q. The 4.5, is that slightly hemolyzed at the bottom of that?

A. Yes, I didn't notice that, it is reported as slightly hemolyzed.

Q. So could you conjecture a picture of his potassium from the time that he initially arrived at McMaster Medical Centre to the time that he left, is there any picture that is given of going up, going down, remaining the same, what would you say about it?

A. Well, based on this information over this period of time that these were obtained, I would say his potassium level was staying within the normal range. It did fluctuate from a high of 5.6 to a low of 3.1.

Q. Yes, which would certainly ---

A. These are all, the 5.6 might be a little bit elevated, that was the first one when he arrived, but it is marginal, the others I think are quite satisfactory.

Q. What is your definition of a





1  
2 normal or a safe level of potassium?

3 A. It depends on the laboratory  
4 norm. In general in a baby this age I would accept  
5 outside levels of 3 to 5½. Somebody might argue with  
6 me a little bit on either end but I think that is a  
7 fair range.

8 Q. I will tell you this, Doctor,  
9 other clinicians have said 3.5 to 5.5.

10 A. Well, I wouldn't argue with  
11 that, again what are your laboratory norms in that  
12 Hospital? I do studies for drug companies and they  
13 always make me select the norm for our laboratory  
14 because they will not interpret the numbers until they  
15 have all the norms.

16 Q. So he has a level of slightly  
17 over 4, the last level taken at McMaster Medical  
18 Centre, and then he arrives at the Hospital for Sick  
19 Children and I understand he has a level of 3.9 upon  
20 his arrival at the Hospital.

21 A. That is my recollection.

22 Q. And what do you have to say  
23 about that level, Doctor?

24 A. I think that is normal also.

25 Q. Now what about his BUN - I  
was going to ask you about his BUN levels?





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A. The first one that is reported on the sheet at Chedoke McMaster Hospital is reported as 34. The next one is 38. The next one is 33. The next one is 27. The next one is 1.9. The last one that is on this sheet is at 19.

Q. What do you have to say about that in comparison to a normal BUN reading?

A. These are all elevated except the last one and it is high range of normal.

Q. And what about his BUN level on his admission to the Hospital for Sick Children?

A. I don't remember what it was offhand.

Q. I don't either.

A. We will see what it is.

Q. It is less than 5 on his arrival at the Hospital.

A. Okay.

Q. Do you have an opinion as to what ---

A. I think 19, 19 is borderline high for a baby this age, less than 5 is normal.

Q. So would it be fair to say his potassium and his BUN levels upon his arrival at the Hospital were normal, or within normal limits?







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A. Yes, I think so, at the Sick  
Children's Hospital.

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Q. At the Sick Children's Hospital?

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A. Yes.

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Q. Doctor, you have in your rating  
for Kevin Pacsai have rated him from a 1 to 5 and  
you rated him as a 4, is that correct?

8

9

A. Without referring to my CDC  
sheets I think that is correct. I have my summary in  
front of me here.

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Q. Would you mind referring to  
your CDC sheets.

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MS. CRONK: Exhibit 273, Doctor.

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THE WITNESS: This is a summary of  
my CDC rating, and yes, Kevin Pacsai was included in  
the 4 patients given a rating of 4.

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MR. SHINEHOFT: Q. I am curious to  
know, Doctor, of the five criteria that you have  
selected in order to be included in No. 5, it seems  
to me that the one criteria that Kevin Pacsia did  
not fit in was that he was prescribed digoxin,  
correct, prior to his admission to the Hospital in  
Toronto.

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A. Let me check and I will answer  
you. I am sorry.





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Q. Okay. This is the letter dated December 14th from Dr. Smith, do you recall that where you set up your criteria?

A. Yes.

Q. Do you have that letter, Doctor?

A. Yes.

Q. And you indicate for rating 5 that patients receiving this rating meet at least four of the following criteria, and the fifth criteria is no digoxin prescribed at time of death?

A. That is right.

Q. I think we discussed it.

THE COMMISSIONER: Excuse me, Mr. Shinehoft, this is what exhibit?

MR. SHINEHOFT: It is Exhibit No. 272, Mr. Commissioner.

THE COMMISSIONER: Thank you. What tab is it, what number?

MR. SHINEHOFT: It is Tab 1.

THE WITNESS: You are speaking of page 3?

MR. SHINEHOFT: Q. Page 3, Doctor, criteria used to rate the probability of death resulting from digoxin intoxication.

A. Yes.





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Q. For a rating 5 you have given  
5 criteria of which a patient has to fall within 4 of  
the 5?

A. That is right.

Q. Now it would appear to me then  
that you are of the opinion that Baby Pacsai did not  
come within 4 of 5?

A. That is correct.

Q. Which one, which of these did  
he not come within, in your opinion?

A. He didn't, I don't think he  
met criterion, we are talking about rating 5 now?

Q. Yes.

A. I am going from memory of his  
circumstances now, and I may need to refer to the  
chart.

Q. You have the chart in front  
of you, Doctor.

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THE COMMISSIONER: You didn't have -  
I think I can answer.

THE WITNESS: Yes, here we go.

MR. SHINEHOFT: Q. Yes, it is No. 5.  
I am aware I believe that he doesn't come within  
the parameters of guideline No. 5; is that correct,  
Doctor?

A. That is right.

Q. But which other one did he not  
come ---

A. The other one he did not  
achieve in my judgment was ante mortem concentrations  
well above therapeutic range.

Q. Well, Doctor, you are aware  
of the ante mortem levels that he had?

A. Of 10.

Q. Of greater than 10?

A. Well, it was somewhere there.  
Those ante mortem levels.

Q. I am talking ante mortem.

A. Yes, but you see the key word  
here is unequivocally toxic range, and my problem  
was I didn't know how much above 10, and we know  
that I have seen it in my personal experience there  
are babies who have levels within the 10 range that







1

2

don't show toxicity so I couldn't say he was

3

unequivocally in the toxic range.

4

Q. No, but if you could answer

5

this question, Doctor, what is the therapeutic range

6

of digoxin?

7

A. Well, for babies it is poorly

8

described, but the usually clinically used range is

9

somewhere in the neighbourhood of .8 to 3 nanograms

10

per millilitre.

11

Now some people will say 1 to 3,

12

some, .8 to 2.5, but I will take it .8 to 3.

13

Q. So his level, his ante mortem

14

level is at least three times the normal therapeutic

15

level, possibly more? That is the upper range of

16

the therapeutic level? Is that correct, Doctor?

17

A. Well, you are describing it

18

in terms of therapeutic range. I am describing it

19

in terms of unequivocally toxic.

20

Q. I just want to get ---

21

A. His level was apparently at

22

least 3 times the range that we usually accept as  
a satisfactory serum concentration during therapy.

23

Q. Isn't that ---

24

A. But it is not 3 times a

25

concentration that we not uncommonly have seen in





Kauffman, cr.ex.  
(Shinehoft)

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children who are not showing any toxicity.

3

4

Q. But he exhibited both, did he not? He shows the high levels in his blood ---

5

6

A. Well, he exhibited symptoms that were quite compatible with digoxin toxicity in my opinion.

7

8

9

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11

12

Q. So am I correct in saying, Doctor, that if the criterion No. 2 were changed slightly to read ante mortem serum digoxin concentrations in the toxic range, and deleted the word "unequivocally", then would you be of the opinion that he would rate a 5?

13

14

15

16

A. No, because he doesn't meet - well, four of the five, but I very deliberately and advisedly made it so that it had to be clearly outside what I could accept as being there but not producing toxicity.

17

18

Q. I see. But if he were in the bata phase of distribution.

19

20

A. If I changed any of my criteria I could re-juggle the patients in the categories obviously.

21

22

Q. I am just talking about one word.

23

24

25

A. Well one word can be terribly





1  
2 important.

3 Q. I agree, but you are saying  
4 that 10, even though it is high, and even though it  
5 is outside the normal therapeutic level isn't in your  
6 opinion unequivocally toxic?

7 A. No. In and of itself it is  
8 not unequivocally toxic.

9 Q. And that is why he was given  
10 a rating of 4 as opposed to 5?

11 THE COMMISSIONER: Doctor, I just  
12 wonder - I am sorry, do you want to answer that  
13 question? Is he answering that question yes?

14 THE WITNESS: I think that is part  
15 of the reason, yes.

16 THE COMMISSIONER: I am just wondering  
17 if he satisfied Item 4 under Rating 5?

18 THE WITNESS: Well, no, because he  
19 didn't have fresh autopsy tissue.

20 THE COMMISSIONER: And that was one of  
21 the problems too, is it?

22 THE WITNESS: I had several problems  
23 with putting him in No. 5. I didn't have fresh  
24 autopsy tissue data on him, and his ante mortem serum  
25 was equivocal, and there was no way I could justify -  
well, I thought he fit the grading 4 criteria.





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MR. SHINEHOFT: Q. Doctor, if I could ask you about the relationships now of potassium and digoxin, the issue of hyperkalemia and elevated digoxin. I believe your evidence has been that one often follows the other but is not necessarily coincidental to the other. Is that a fair restatement?

A. They are not uniformly associated.

Q. And that would be - and what you are meaning I assume is that an elevated digoxin level may cause an elevated potassium level?

- - - -







GG2-1

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A. Yes, but not - it hasn't in  
all reported cases.

4

Q. But it can happen?

5

A. It can, yes.

6

7

Q. Now what about the opposite of  
that, Doctor, and I believe you have given some  
evidence about that.

8

9

10

11

You see there are some paediatricians  
that believe the opposite, that people with elevated  
potassium level can cause an elevated digoxin level.  
Would you agree with that?

12

13

A. No, I don't. If I understand  
the question I don't agree with that.

14

15

16

I know of no evidence, no data that  
substantiates that elevation, independent elevation  
of potassium will cause a detectable or measureable  
elevation of serum digoxin concentration.

17

18

Q. So you have never seen anything  
in the reported literature --

19

20

A. I am not aware of anything  
that would substantiate that statement. If it is  
I don't know about it.

21

22

23

24

25

Q. Well, we have had some people  
who have maintained that theory, but you are saying  
you know of no reported literature that substantiates  
that theory?





GG2.2

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A. No, I am not aware of it.

3

Q. All right. Are you prepared

4

to give us an estimate as to the percentage of cases

5

where an elevated digoxin level would produce an

6

elevated potassium level or you have no --

7

A. I have no basis on which to  
give you a percentage.

8

Q. Okay.

9

A. In response to your question

10

about the potassium and digoxin, potassium causing

11

an elevation of digoxin, I don't know if this is

12

relevant or not, but it is true that potassium, an

13

elevated potassium will tend to reduce the pharmacologic

14

effects of digoxin where a low, an abnormally low

15

potassium will tend to increase the pharmacologic  
effect.

16

Q. It is one of the known antidotes

17

for high levels of digoxin?

18

A. Yes, but I don't equate that

19

with increasing the level of digoxin in the serum.

20

Q. Well, Doctor, Mr. Scott

21

discussed with you certain assumptions that you have

22

made in order to come to the findings that you have

23

made, and I believe that you agreed with him

24

yesterday if you changed some of the assumptions

25





GG2.3

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perhaps some of the results might be changed?

A. Yes.

Q. Now if I could ask you specifically about Kevin Pacsai, and to give you what we do know, we know what his ante mortem level of digoxin was; we know what his post mortem --

A. We don't know definitively what it was.

Q. We know approximately what it was.

THE COMMISSIONER: We have a minimum.

THE WITNESS: We have a minimum and a maximum. We know it was some place between 10 and 25 or 26, and that is a two and a half fold variation, and at least I don't have any idea where within that range it really was.

MR. SHINEHOFT: Q. Fair comment, but we know it was at least 10?

A. Right. I will accept that.

Q. And we know that after his death it was approximately 25.5?

A. In post mortem samples.

Q. We know what his potassium levels were?

A. Yes.





GG2.4

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Q. And we know what his BUN levels

3

were?

4

A. Yes.

5

Q. Correct?

6

A. Yes.

7

Q. And we know a couple of other

8

blood gases, creatinine and sodium and things like  
that?

9

A. Yes.

10

Q. Now if you were to change any

11

of your assumptions with regard to the child Kevin

12

Pacsai keeping in mind what we do know, would your

13

opinion of his cause of death change or the category  
that you have placed him change?

14

A. Well, you would have to ask

15

me about specific assumptions and how I was going to

16

change them I think.

17

Q. I see.

18

A. Before I could respond to that

19

meaningfully.

20

Q. I see.

21

A. You see, I made certain

22

calculations to calculate a minimum dose that might  
be possible.

23

To do this, my pharmacokinetic

24

25







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assumptions did not impact on my decision as to whether or not the probability of the relationship of digoxin to his death - they were simply used to then say if indeed digoxin was related to his death, what is a minimum dose that might have produced this situation based on these assumptions.

Q. But there are certain knowns that form part of your formula as well, and I just reviewed them with you, the ante mortem levels, post mortem levels and things like that.

A. Right.

Q. And I am saying could you formulate an opinion, just on that information alone without making these other assumptions?

A. Which opinion?

Q. As to the cause of death or as to what category it would place him in?

A. Well, if you are talking about the assumptions I made in terms of volume of distribution - are those the assumptions you are talking about?

Q. Yes.

A. Because I am not sure that I understand your question.

Q. I perhaps have worded it badly.





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A. My assumptions were that 70% of the dose was absorbed, that he had an elimination half life of 30 hours; that distribution equilibrium had been completed so the volume of distribution was 10 metres per kilo; but there was an interval between the dose and death of 6 hours, and that the serum concentration at the time of death was in the mid range of hour extremes, 15 nanograms per ml.

Q. You used 15 I think.

A. And an elimination rate constant of .0231. And then based on those I calculated a minimum dose.





GG-3-1 1

EMT/cr 2

Q. Are those assumptions ---

3

A. Those assumptions didn't

4

have any direct relevance to my probability rating.

5

They were simply used to try to come up with some

6

ball park estimates of a feasible dose.

7

Q. So it had nothing to do with

where you rated this baby?

8

A. No, I didn't need to go

9

through the dosing exercise to write this baby.

10

Q. You had enough information

11

from his chart?

12

A. I didn't have enough

13

information on any of these babies, but I worked with

what I had.

14

Q. Thank you, Doctor.

15

A. But I based my rating on

16

whatever information I had.

17

Q. Now, Doctor, you had given

18

some opinions and the Murphy child was discussed

19

with you yesterday and I believe you gave evidence

20

at the Inquest of Gary Murphy?

21

A. That is correct.

22

Q. I would like to discuss Gary

23

Murphy and Kevin Pacsai because there seems to be

24

some similarities or some people think there are

25





1  
2 some similarities between the two.

3 I would like to ask you about, in your  
4 opinion, if there were any anatomical differences  
5 between the two?

6 A. Well, there were extreme  
7 anatomical differences between the two.

8 Q. Is it your opinion or do you  
9 have an opinion as to whether these anatomical  
10 differences make it impossible really to make a  
11 comparison between the two? In other words, to use  
12 your phraseology, are you comparing apples and oranges  
when you compare Murphy and Pacsai?

13 A. Well ---

14 THE COMMISSIONER: Not his exclusive  
15 phraseology. It seems to me I have heard that  
16 expression before.

17 MR. TOBIAS: I take some credit for  
18 that.

19 THE COMMISSIONER: All right, Mr.  
20 Tobias invented it then.

21 MR. SHINEHOFT: Q. Can we compare the  
22 two I guess is what I am saying.

23 A. I cannot put those two patients  
24 in the same category at all.

25 The only similarities that I really see







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is that their post mortem serum concentrations were almost identical, and there was one other similarity that I can't remember - I think that neither of them - no I can't remember what it was now. There was some other minor similarity and I can't remember what it was.

Q. Did they both have renal failure?

A. But I may have commented on it in my testimony.

Q. The BUN levels on both of them were ---

A. Well, it wasn't very impressive on either one of them.

Q. Neither had renal failure?

A. No, I couldn't see any evidence of renal failure in either one of them. But there were other major differences between them.

Gary Murphy was six or seven months old; Kevin Pacsai was a few weeks old.

Gary Murphy had severe cyanotic heart disease with a very complex anatomical abnormality. Kevin Pacsai had no anatomical abnormality, and when he didn't have his dysrhythmia he seemed to be oxygenating and having normal cardiac output as near





1  
3-4 2 as I could tell from reading his record.

3 Gary Murphy had a prolonged progressive  
4 downhill course with an irreparable heart defect,  
5 and the decision had been made not to take aggressive  
6 intervention but to keep him comfortable and let  
7 nature take its course.

8 Kevin Pacsai was an apparently healthy  
9 looking baby but then got sick shortly for a period  
10 of time prior to his admission, and then almost died  
11 from a dysrhythmia that is described at least one  
12 place as paroxysmal atrial tachycardia.

13 Q. Yes.

14 A. And went into shock.. But then  
15 once that reversed, things reverted to normal, by  
16 the time he arrived to Sick Children's Hospital he  
17 seemed to look, from what I can tell, pretty good for  
18 the next few hours until he developed an irregular  
19 heartbeat again. So I see many more differences  
20 between these two babies than I see similarities.

21 Q. So it is really impossible  
22 to make that analysis or comparison would you agree?

23 A. I don't see them as comparable  
24 at all other than their post mortem digoxin  
25 concentrations.

Q. Finally, Doctor, there is some





1  
2 evidence in the chart of Kevin Pacsai that he after  
3 his arrival to the I.C.U. went back into normal  
4 sinus rhythm for a short period of time.

5 A. You mean after his initial ---

6 Q. He was seen by Dr. Costigan  
7 on the ward at I believe 5:30 in the morning and he  
8 was transferred to I.C.U. around 6 o'clock, and  
9 apparently there is in the chart something to the  
10 effect that he went back into normal sinus rhythm  
11 for a period of time and no one really knows how short  
12 or how long that period of time is.

13 A. I would have to refer to the  
14 chart but I do recall something where there was a  
15 short period of a nodal or sinus rhythm described  
16 around that time. I would have to refer to his  
17 chart to answer you.

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I would have to refer to the chart  
to answer you.

Q. Well, perhaps you could refer  
to his chart, page 66. Have you got his chart there,  
doctor?

A. Yes, I am looking at page 66  
of the chart.

Q. A 23-day old baby.

A. Yes, sure. That is the ICU,  
one hour later bradycardia, 2 to 1 block noted,  
prolonged PR. On leaving ward developed bradycardia  
down to 40, cyanosis, brief apnea, further episodes  
of bradycardia and 3 to 1 block.

Q. Maybe it is not when he was  
immediately transferred. There is some indication  
in one place in the chart, and I just can't find it,  
I will continue looking for it, Doctor, and he went  
back for a period of time to normal sinus rhythm.

Do you recall reading that in his  
chart?

A. I vaguely recall reading that  
someplace but I can't find it now in his resuscitation  
notes.

Q. Would that surprise you if the  
child had received --







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A. I'm sorry, there is a note on March 12 on page 70 that says, "Child had sinus rhythm last night, problem began this a.m.".

Q. Maybe that's it.

A. "X-ray reported normal, heart size plus no (something) edema, arrhythmias noted, ventricular fibrillation, could not be revived, no obvious underlying cause, agree with treatment."

That must have been a note by one of the staff physicians.

Q. Now, if the child had an overdose of digoxin, is it possible that the child could revert back to normal sinus rhythm for a period of time before showing signs of digitalis toxicity?

THE COMMISSIONER: After showing signs and before dying.

MR. SHINEHOFT: Q. After showing signs and before dying.

A. During the course of toxic symptomatology.

MR. OLAH: I think the reference that he is looking for is at the bottom of page 69.





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MR. SHINEHOFT: Thank you.

MR. OLAH: I think it is the last  
five lines at the bottom of the page.

THE WITNESS: Okay, on page 69 at the  
bottom.

MR. OLAH: The second-last line,  
Doctor.

THE WITNESS: "During the evening  
the patient became bradycardic with  
2 to 1 and 3 to 1 A/V block - to the  
ICU, atropine was given, rate  
regular, sinus rhythm."  
And then they've got the high potassium and we are  
treating the potassium and then he went back into  
ventricular fibrillation apparently shortly thereafter.

Q. Yes, returned to sinus  
rhythm.

A. So, he was doing a lot of  
different things during this time. He was having  
changing heart rate, he was having variable conduction  
block, he was reverting to a different kind of  
rhythm and eventually went into ventricular fibrilla-  
tion from which he could not be resuscitated.

Q. Right. Does the fact that  
this child went back into sinus rhythm, is that





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unusual in a situation like this?

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A. I can answer it to the

extent that it is consistent with some of the

reports in the literature of what happens with the

heart during digoxin toxicity and non-intoxication

and I suspect that what is going on is that the

digoxin has the electrical characteristics of the

heart so deranged that you have multiple sites in

the heart initiating depolarization so that you have

changing blocks, changing rates and an extremely

irritable heart, and it has been described in

published cases occasionally that a part of this

whole picture can include a brief time of what

appears to be a sinus rhythm followed then by some

more severe arrhythmia.

So, it doesn't particularly surprise

me, and it certainly doesn't suggest to me in the

face of everything else that it is not digoxin

intoxication.

Q. You wouldn't happen to have

the reference to the literature?

A. I would have to go through

my stack of the literature. This kind of thing is

described in some of the individual case reports. It

would take me a while to look it up but I could do

that sometime.





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Q. But that didn't alter your opinion, it didn't eschew it?

A. No, because of being aware of this kind of pattern in describing the cases of digoxin intoxication, that didn't particularly bother me.

MR. SHINEHOFT: Thank you very much, Doctor, those are my questions.

THE COMMISSIONER: Now, Mr. Shanahan, what is your position going to be on the 19th?

MR. SHANAHAN: As I say, on the morning of the 19th I am in tight quarters.

THE COMMISSIONER: Well, how long would your examination be?

MR. SHANAHAN: Well ...

THE COMMISSIONER: Quite a while?

MR. SHANAHAN: No, no. I think I suppose about a half an hour. I would like to say 15 minutes but I don't think I will.

THE COMMISSIONER: Well, I don't think we can trust the Toronto rush hour.

MS. CRONK: Mr. Commissioner, could I make a suggestion, sir. I will speak to Mr. Shanahan and see what we can work out for the 19th but we do have about 15 minutes and if that is all Miss Symes







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is going to be may I suggest she finish it today.

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THE COMMISSIONER: Well, I don't think Miss Symes can finish in 15 minutes, that's the problem. I really want the doctor to get away at a quarter to five.

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Yes, Mr. Tobias, you're in trouble?

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MR. TOBIAS: Yes. I may not have a problem at all. I didn't anticipate that Miss Symes would be re-examining on the 19th. Certainly if she anticipates being anything more than a half an hour or forty minutes --

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THE COMMISSIONER: I am going to take times right now and hold people to them and we will try to sort people out. The first thing, Dr. Kauffman, I think, thank you very much, we would like you to go now. I'm not being rude.

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THE WITNESS: Okay, I will pack up and get ready to leave.

THE COMMISSIONER: I don't know what the Detroit rush hour is like but Toronto rush hour is god-awful and I think you should be on your way.

THE WITNESS: Thank you.

MR. ORTVED: Mr. Commissioner, I know how much you are going to welcome this but I have a matter of housekeeping of about two minutes that I





JJ2.3

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completely forgot about this morning.

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THE COMMISSIONER: Yes.

4

MR. ORTVÉD: May I?

5

THE COMMISSIONER: With Dr. Kauffman?

6

MR. ORTVÉD: Yes.

7

THE COMMISSIONER: Yes, all right.

8

Some housekeeping that is going to be two minutes.

9

THE WITNESS: All right.

10

CROSS EXAMINATION BY MR. ORTVÉD:

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Q Dr. Kauffman, I'm sorry, but

12

this morning I just wanted to ask you very briefly  
about your reference on Exhibit 273 and 274 regarding  
Brian Gage. You will notice there under your heading  
Cause of Digoxin Intoxication opposite Brian Gage on  
both of those exhibits there is reproduced there the  
reference in the rating sheets to pre-existing  
intoxication due to prescribed doses, correct?

17

A. Yes.

18

Q What I on behalf of the doctor

19

wanted to ensure here, because I understand from the  
balance of your testimony that you are not suggesting  
that it was the prescribed doses leading to the value  
of 3.5 that killed this baby?

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A. No. What I was referring to

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in the wording is poor and that reflects my informal

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handwritten notes at the time. What I was referring to was a baby who had an increase in his concentration consistent with an increase in the dose prior to his getting into trouble.

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O. All right, that is all I  
wanted to cover off. Thank you, Mr. Commissioner.

THE COMMISSIONER: All right, thank  
you. Thank you then, Doctor.

---Witness withdraws.

THE COMMISSIONER: Now, Miss Symes,  
15 minutes and you will just have to sort yourself  
out, that is all you will have is 15 minutes on the  
19th.

Now, Mr. Olah, how long do you expect  
to be?

MR. OLAH: I would expect to be about  
a half an hour, Mr. Commissioner.

THE COMMISSIONER: Miss Jackman?

MS. JACKMAN: An hour.

THE COMMISSIONER: Mr. Labow?

MR. LABOW: A half an hour, Mr.  
Commissioner.

THE COMMISSIONER: All right. Now,  
Mr. Tobias?

MR. TOBIAS: A half an hour, Mr.  
Commissioner.

THE COMMISSIONER: Well now we have  
two and three-quarter hours on the 19th. What is  
your - you don't need to answer this question but does







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your engagement take you longer than that?

MR. SHANAHAN: My engagement!  
Sir, my commitment is at 10 o'clock in the morning.

THE COMMISSIONER: What sort of  
a commitment is it?

MR. SHANAHAN: If we were to start  
early on that morning on the 19th and I was to be  
permitted to go first.

THE COMMISSIONER: Well, what sort of  
an engagement do you have?

MR. TOBIAS: I would advise you not  
to answer that, Mr. Shanahan, unless you have a very  
good answer.

MR. SHANAHAN: This is getting to be  
very romantic. It is fairly and simply, sir, to be  
in two different provincial courts at the same time,  
the old criminal lawyers stuff.

THE COMMISSIONER: Well, are you  
counting this as one of the provincial courts?

MR. SHANAHAN: No. It is two  
provincial courts, sir, in the old conundrum that  
the criminal lawyers face. If it were to start  
early, sir, then I could ---

THE COMMISSIONER: How long are you  
going to be.





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2 MR. SHANAHAN: I would think I would  
3 be 15 minutes to a half hour, that range.

4 THE COMMISSIONER: Well, I am going  
5 to give you 22½ minutes then.

6 Well, what I want to do is, I want  
7 to start in and let Mr. Hunt and Miss Cronk have the  
8 afternoon but it is conceivable that we could - I  
9 take it these provincial courts don't function in  
the afternoon, or do they?

10 MS. SYMES: They don't function at  
11 any time.

12 MR. SHANAHAN: There are people here  
13 from the Crown Attorney's office, so, I won't give  
any secrets.

14 Now, you see, at the other end, sir,  
15 around 11 or 11:30 I would probably be reached here  
16 and that is really my worst time out there, I  
17 apologize.

18 THE COMMISSIONER: Well, no, why don't  
19 we put you on at ---

20 MR. SHANAHAN: If I got started early  
here then I would be out of here.

21 THE COMMISSIONER: Well, could you go  
22 on at 2:15?

23 MR. SHANAHAN: That would be perfect.  
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THE COMMISSIONER: 2:15 then, or

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2:30.

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Have you any thoughts on how long you  
will be?

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MR. HUNT: I would think about an  
hour to an hour and a half.

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THE COMMISSIONER: Well, I think what  
we will do is, we will give Mr. Shanahan 20 minutes  
in the afternoon. You can be here by 2:15 without  
any trouble?

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MR. SHANAHAN: I might say too, sir,  
that I am going to speak to Miss Cronk because there  
may be a lot of areas here that - I just won't say  
any more but she may be able to carry the load.

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THE COMMISSIONER: Well, all right.  
We will worry about that. But in any event, I am  
going to ask all of you to complete and Mr. Tobias  
if you are the last on the list you will have your  
full half hour anyway so that we may have a chance  
at 12:30 to complete. I am going to have to hold  
people to the times because we have no control over  
this witness at all. If he doesn't want to come back  
there is just no conceivable way that I can force  
him to come back, and we are grateful that he has  
come back. Now, that being the case, we are not





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sitting Monday morning because of the Council of  
Judges. We will sit at 2:30 on Monday. So, we will  
rise until 2:30 and then Dr. Hastreiter will be here  
at 2:30 on Monday.

---Whereupon the hearing adjourned at 4:40 until  
Monday, the 5th day of December, 1983 at 2:30 p.m.

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